The Composition of Meaning

From lexeme to discourse

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THE COMPOSITION OF MEANING

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The composition of meaning[*]

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Linguistic competence is a cognitive ability unique to human beings, characterized either as knowledge *that* certain sentences are grammatical or certain phrases have more than one meaning, or as knowledge *how* to express thoughts into sentences or to communicate what happened in a story. The first characterization is associated with the formalist, generativist school of linguistic theory. The latter is advocated by functionalist, semantic or pragmatic theories of our knowledge of language. In Newmeyer's highly acclaimed book *Language Form and Language Function* (1998) the author takes a clear, but no doubt formalist-biased look at the contributions that formalists and functionalists have made toward *explanations* of why linguistic descriptions and their underlying theoretical assumptions are as they are. Both functionalists and formalists camps agree how to distinguish language knowledge from language use, grammatical from non-grammatical knowledge, and syntactic from non-syntactic knowledge. This is less clear with respect to lexical versus encyclopedic knowledge and the question whether syntactic distinctions are at the same time meaningful in terms of semantic distinctions. In the formalists' view knowledge of language is autonomous in relation to non-grammatical knowledge, and within grammatical knowledge it is possible to distinguish a syntactic, computational component, autonomous from semantic and other modules of grammar. The central formalist claim, in particular the Chomskyan generative position, is that explanatory power of descriptions and syntactic representations resides in the universal character of syntactic theory itself. In other words, syntax is *internally explained* again by syntax, albeit of a higher order. *External explanations* may be derived from functional properties of language in processes of conceptualization and communication, among which the assumption that there is a close, perhaps even compositional mapping between semantic

and syntactic constituent structure. In the modular design of the generative theory (*Universal Grammar*; Chomsky 1993 and later), the mapping to semantics is the only interface at this top level. The clausal, computational component has always been taken to be mute to relations of 'communicative dynamics' – i.e., the relation to text and discourse structures beyond the isolated clause.

The present collection of original articles develops the concept of interfaces further. There are in principle two views: an interface may be the domain or module where restrictions developed in one module are applied to another. Representations are derived in terms foreign to the module where the representations are located. In the terminology of *Minimalism* (Chomsky 1995; see also Abraham, Epstein, Thráinsson, & Zwart (Eds.) 1995), such representations are attained by derivation (*Move* and *Merge*), as opposed to those interface descriptions that come about by direct identification in another module (i.e., through *Merge*, or lexical insertion, in the terminology of *Minimalism*).

The semantics-syntax interface had accounted all along for meanings at the level of Logical Form (Chomsky 1981; Hornstein 1984, 1995). The syntax-pragmatic interface, on the other hand, is the result of what one may call the 'pragmatic turn' in the linguistic theory, where content is partitioned into given and new information. In other words, the structural division of the clause has been subjected to criteria of information, or discourse structure. Focus/rheme and topic/theme have been assigned particular structural positions in the clause (cf. Brody 1990; Rooth 1992 for English; Rizzi 1997 for Italian; Abraham 1993, 1997 and Molnárfi 2002 for German). Both interfaces require a structurally descriptive inventory whose specific shapes can be motivated on theory-internal grounds only. As regards the syntax-pragmatic interface, one alternative is to do without information-structural features (i.e., categories in the structure of the clause such as ±*foc* und ±*top*, similar to ±*wh*, introduced much earlier; see e.g. Meinunger 2000) and transfer the explanatory power to the interface between grammar and cognitive processes. Such a step would seem to converge closely with basic tenets of Minimalism (Chomsky 1993, 1995). It would, no doubt, be a natural view for optimality-theory (Grimshaw 1997), specifically if, following Pesetsky (1998), focused on the interface of phonology, syntax, and discourse structure (Fanselow 2002). The papers by Weiß, von Heusinger, Hendriks, and Molnárfi included in this collection in Section 2 develop these issues in much more detail.

Section 1 comprises the papers on the syntax-semantics interface. Susan Olsen's paper *Coordination in Morphology and Syntax: the Case of Copulative Compounds* addresses the composition of the meaning of morphologically complex compounds, assuming a Principle of Ontological Coherence (POC),

requiring that a complex concept as the denotation of a morphological object picks out a coherent individual from a domain of individuals. Her results show that copulative compounds P-Q in English are genuine morphological structures that instantiate the identity relation λx ∃y [x = y & P(x) & Q(y)], resulting in the coordination of two predicates which are subject to the POC. This pattern is found in all unembedded cases and can be shown to occur in embedded positions as well. However, when a compound occurs embedded under certain types of head nouns, it can be interpreted conform to the semantic or conceptual properties of this head. This interpretation is still copulative, i.e. interpreted via coordination of predicates, but isn't subject to the POC, as long as it is licensed by the semantics of an appropriate head.

Aspectual properties of perfectivity and imperfectivity are often syntactically encoded in different functional locations in the UG-structure. The motivation for this assumption are manifold (see, e.g., Tenny & Pustejovsky 2000 or Cecchetto, Chierchia, & Guasti 2001), but never at the same level of semantic plausibility as the small clause account, deep inside of VP, for perfectivity (see Abraham 1993 etc.). In *Aspect, Infinitival Complements, and Evidentials*, Elly van Gelderen is concerned with aspect and its syntactic properties in the diachronic stages of English in relation to infinitives and their specific morpho-phonological form. She draws a longitudinal account of bare infinitives opposing the views espoused by Giorgi and Pianesi's (1997). It is shown that complements to perception verbs continue to have non-perfective bare infinitives after the infinitival ending disappears in the history of English, when the use of the simple present still continues. Furthermore, van Gelderen argues that there are two kinds of *see*, an evidential one and a full verb representation, each with their own syntactic structure. Along with Abraham (e.g. 1990, 1998) she analyzes the restrictions on (infinitival) complements to modal verbs in English and German in terms of aspect. Deontic modals are assumed to have non-perfective complements, whereas epistemic modals have perfective ones. This connects again to Giorgi and Pianesi's (1997), since these authors argue that bare (eventive) infinitives without *-e(n)*, as in English, are perfective, but that infinitives with *-e(n)*, as in German and Dutch, are not. Their claim is incompatible with Abraham's, since, due to the perfectivity of English infinitives, only epistemic modals could occur. Van Gelderen now closes this gap by shedding doubt on the assumption that eventive infinitives without ending marker are perfective. The reasons for these doubts are that only certain bare infinitives are perfective and that at the time of the loss of the infinitive marker around 1400, there is no sudden change in either the interpretation of (1) or the grammaticality of (2).

(1)   Modern Standard English: *I saw/*see him cross the street.*

(2)   Middle English: *What do ye, maister Nicholay*   (Chaucer, I, 3437)

As to why Modern English, on the one hand, and Dutch, Old English, and Middle English on the other differ, van Gelderen argues that including a structural ASPECT Phrase (ASPP) explains a number of phenomena and that an ambiguous form like *saw* is an evidential modal. The observational motivation for this assumption are the complementation similarities between deontic and perception verbs in Modern English, which stem from being located in ASPP or being lower than ASPP. Epistemic modals select an ASPP and are therefore higher.

    In structures with an embedded clause, there are obviously two events to account for. The structures examined by van Gelderen here are ones where bi-clausals become mono-clausal, and the two (original) events may be one. Therefore, it may be more accurate to say that there is one event in (1) above, rather than a seeing event and a perfective crossing, but two in (3) below.

(3)   Modern Dutch: *Ik zag/zie hem de straat oversteken.*

This may be a result of the grammaticalization. It relates to Travis (2000) who places ASP between two VPs, the highest being process and the lowest result, and tests such as the use of *again/once more* are very inconclusive.

    The results of van Gelderen's analysis account for a number of typological and historical phenomena, as well as for the difference in constituent structure between bare infinitives and *-ing* constructions and restrictions in complementation to perception verbs. The syntax van Gelderen suggests also reflects the fact that in many languages evidentials and perfectives are related, in accordance with Abraham (1998, 1999). The main differences between Modern English and similar languages now emerge as (a) *saw* is more grammaticalized in the former than in the latter, (b) the contents of ASP in Modern English depend on the affix, whereas in Germanic, ASP is ambiguous, and (c) as argued by traditional grammarians, the real changes are caused by the availability of *-ing*, and perhaps by the loss of aspectual markers. Around the same time that *-en* is lost, i.e. around 1400, *to* was reanalyzed as INFL. Hence, tense became more prominent at the expense of aspect, but the effects of the aspectual system remain tangible.

    To answer the general question when a given syntactic form makes any semantic sense, Helen de Hoop argues in *The Problem of Unintelligibility in Optimality Theoretic Semantics* that it might be helpful to study when utterances do not make any sense. Of the different types of forms that do not make sense she examines only one particular type, namely when a syntactically well-

formed expression does not obtain a felicitous interpretation. This is called the problem of *unintelligibility*, the natural counterpart of the problem of *ineffability*, well known in Optimality Theory. *Unintelligibility* is not a real problem for the optimality theory, de Hoop argues, once we recognize that infelicitous interpretations, like contradictory ones, might in some cases be optimal and hence should be part of the candidate set of interpretations. Unintelligibility is more than a violation of the general constraint *Avoid Contradiction*, however. Unintelligibility arises when incoherent meanings are part of marked super-optimal form-meaning pairs in the sense of Blutner (2000).

Ergativity is a linguistic concept with many divergent facets. Ergative (unaccusatives) verbs are held by UG-grammarians to be intransitive without an external argument as subject (cf. 'Burzio's Generalization' in Burzio 1986). Typologists and functionalists (e.g. Dixon 1995) criticize the treatment in modern syntax as sheer misconception. Generative syntacticians, on the other hand, show little consideration of the typologist empirical evidence of the phenomenon (cf. Reuland (Ed.) 2000). Abraham's chapter *VP-internal subjects as 'unaccusatives': Burzio's 'Object Account' vs. the 'Perfectivity Account'* follows a totally different route of explanation by taking as a point of departure the claim that Burzio's Generalization concerns a typological epiphenomenon restricted to languages like English and Italian, but not (at least not directly) to Dutch, Russian, Hindi, and German. Instead of seeking the solution in a reformulation of structural criteria, Abraham claims that at the bottom of unaccusativity and Burzio's Generalization is both phrasal and Aktionsart, i.e., lexical, perfectivity. Scrutinizing Burzio's dichotomy of intransitive verbs, he demonstrates that no such division of two classes of intransitivity exists, at least in languages that morphologically identify perfective predicates. Since ergative predicates appear related to the indefiniteness of existential sentences, the Ergative Hypothesis (Burzio's Generalization) hinges crucially on the VP-internal position of subjects. After scrutinizing tests relating to such VP-internal subjects, he concludes that the distributional criteria of ergativity and perfectivity coincide. Unaccusativity in German and Dutch is recognized as a unified aspectual category based on one single common denominator for tests identifying ergative/unaccusative verbs (eVs). As a consequence, VP-internal subjects are diagnosed as rhematic subjects. From all of this follows a paradox of Burzio's Generalization in German: If perfectivity is at the bottom of Burzio's classification, then it cannot explain why there is no ergative transitive verb – something that follows automatically in the perfectivity account. Abraham's main conclusion is that, at least for languages that identify perfectives morphologically, the

notion of 'ergativity' should be replaced by the traditional notion of 'perfective intransitives'.

Section 2 is devoted to the syntax interface with information structure, or the discourse. Structural criteria have long been regarded as clearly clause and clause-syntax external phenomena simply because the constraints on merging lexical elements have been regarded as dumb to requirements outside the clause. But this clearly depends on a variety of typological conditions. First and foremost, SOV-languages (of which English, the main linguistic stock of modern syntax, is not one) locate pronouns, pronominal clitics, non-stressed pro-forms as well as definites in clause positions different from full indefinite nouns, indefinite pro-forms and stressed pronouns. Such categories, by their very categorial status as (un)accented-(in)definite-(non)pro-forms and thus themata-rhemata, respectively, obtain clausal positions (far) to the left of temporal adverbs (i.e., outside of VP, but to the right of Comp) or to the right (i.e., inside VP). This weakens the strict syntactic (Minimalist) position that Movement is a mechanism restricted to clause-grammatical derivation. Furthermore, various Focus realizations entail movement and often refocusing of clausal elements that are not part of the basic move operations required for constituency beyond Merge (i.e., the insertion of lexical elements into the computational component). Representatives of the second line of argument are Brody (1990), Erteschik Shir (1997) for English, among others, and Abraham (1993, 1995, 1997, 2002), Cinque (1993), De Kuthy (2000), Cook (2001), Molnárfi (2001, 2002, 2003), Abraham and Molnárfi (2002), Pili (2000), and Fanselow (2002) for German. See also Rebuschi and Tuller (Eds.) (1999). The main question remains how to integrate syntax and discourse-sensitive phenomena.

In Petra Hendriks' paper 'Either, both *and* neither *in coordinate structures',* it is argued that the elements *either*, *both* and *neither* occurring in coordinate structures must be analyzed as focus markers, rather than as coordinators. These elements resemble focus particles with respect to their distribution, their interaction with the focus in the sentence, and their semantic properties such as scope. Whereas *either* and *neither* behave like restrictive focus particles, *both* behaves like an additive focus particle. In addition to their use as focus particles, *either*, *both* and *neither* also have other uses, which are partly governed by other restrictions.

Weiß' *Information structure meets Minimalist syntax. On argument order and case morphology in Bavarian* analyses the interaction of case morphology and (relatively) free word order in Middle Bavarian, drawing some theoretical conclusions regarding the relation between information structure and narrow

syntax in the Minimalist sense (Chomsky 1999). The paper mainly addresses the phenomenon of object scrambling in SVIODOV-German (i.e. optional inversion of indirect and direct objects, if both are definite, and obligatory inversion in case of the indirect object being indefinite) contrasting it with languages like (SVDOPPV-)Dutch and (SVOPP-)English, where this type of scrambling is absent. Far reaching conclusions will be drawn with respect to the relation between the computational system of the human language faculty and the requirements stemming from information structure. In order to account for the two linear varieties and their discourse-motivated differences, the Principle of Strong Morphology (PSM) is introduced, assuming a new relation between morphology and the need to move overtly for checking demands. In contrast to the Feature Strength Hypothesis, relating feature strength to morphological strength, it is assumed that weak morphology triggers overt movement to check uninterpretable features, whereas strong morphology delays checking to LF. This is explained along the lines of Lasnik's Virus Theory. Languages with weak case morphology (like Dutch and English) have to check uninterpretable features immediately, i.e. overt movement to the functional projections is necessary. In languages with strong morphology like the (Austrian-) Bavarian variant of German, where case morphology allows to distinguish at least between structural and oblique case, overt checking does not occur because strong morphology makes an uninterpretable feature 'invisible'. In such languages, overt movement can serve other demands (e.g., information structuring), whereas overt movement to the functional layer seems to have a freezing effect. The PSM explains thus why languages with weak case morphology do not exhibit (IODO-)object scrambling, but languages with strong case morphology do. It is shown that the PSM also makes the right predictions for other languages (e.g., Malayalam exhibits the same inversion behavior as Bavarian) as well as in other grammatical domains (e.g., N-to-D raising in Scandinavian). The distinction between core features (e.g., ±-features, case, and EPP) and non-core ones (e.g., topic or focus) is related to markedness (in the sense of Höhle 1982). In other words, movement operations which check core features are necessary for the computational system and result in unmarked constructions, whereas movement operations checking non-core features add markedness to constructions, because movement – as compared to merge (lexical insertion) – is costly, and movement not demanded by the computational component further violate principles of economy.

Two different schools of semantic theories of information structure (von Stechow 1982; Jacobs 1983; Rooth 1985; Krifka 1991) both assume a partition of the meaning of a sentence into (at least) two distinct informational

units. The Structured Meanings account exploits a movement of focus particles, binding traces at LF. The Alternative Semantics account associates two different interpretations with each sentence without syntactically affecting its structure. These notions of information structure play a crucial role in the interpretation of a sentence in discourse with respect to its felicity conditions and its presuppositions. Furthermore, they serve as arguments for focus particles. The sentence meaning is compositionally derived from the meanings of the informational units and focus operators. In *Focus Particles, Sentence Meaning, and Discourse Structure* Klaus von Heusinger shows that both views of information structure face serious problems with the compositional process in more complex cases. He argues that information structure must be represented by two overlapping units, rather than by two disjoint ones. The *foreground*-unit corresponds to the whole sentence, and the *background*-unit corresponds to the whole sentence minus the focused expressions. These two units differ with respect to their contributions to the discourse interpretation and with respect to their interaction with the established discourse representation. Evidence for the Foreground-Background Semantics is gained from an in-depth analysis of the interpretation of focus particles and adverbs of quantification in Structured Discourse Representation Theory, which adopts rhetoric relations as structural constraints on accessibility of reference markers

Molnárfi's *On the Interpretation of Multiple Negation in Spoken and Written Afrikaans* investigates sentential negation in written and spoken variants of modern Afrikaans. It argues that negative concord in Afrikaans is not subject to the Neg-Criterion, but is an instance of feature percolation with the spell-out of one or more Neg-copies within the scope of negation. Second, following Abraham (2000), the paper analyses negative concord as a characteristic property of spoken vernaculars exploited to facilitate parsing of sentences. Spoken and written Afrikaans employ different strategies of information processing, which affect the scope interpretation of multiple negation. Sentences such as (4) are not interpreted as double negation, but as a single sentential negation, referred to as *negative concord* (NC) in the literature (cf. Weiß 1999: 819; Haegeman 1995 for West Flemish or Bayer 1990; Weiß 1998, 1999, 2000; and Abraham 2000 for Austrian-Bavarian). Apart from a few descriptively oriented studies (Ponelis 1993), negation in Afrikaans has remained a rather neglected field of research, as in (4).

(4) Ek het $\underline{nie_1}$ geweet dat hy bobbejane gesien het $\underline{nie_2}$.
     I   have not   known that he baboons   seen has not
     'I didn't know that he has seen baboons'

Establishing *negation brackets*, consisting of two morphologically identical negative particles, the first negator (*nie*$_1$) opens the scope of negation, whereas the second one (*nie*$_2$) marks the right-periphery of the sentence, accompanying negated elements deep down into the extraposition domain. Similar to what has been observed in Austrian-Bavarian German and West Flemish, multiple occurrences of negation particles do not trigger the logically expected cancellation of negation.

Interestingly the semantic interpretation of NC seems to vary in standard Afrikaans and its spoken vernaculars. Negative concord is much more radical in the spoken language, where the spell-out of *additional* negation copies with NC-reading is allowed.

(5) Ek het   niemand nie gesien nie.
     I   have nobody   not seen   not

Readings (DN = double negation, NC = negative concord)

    a. I have seen everybody (DN-reading, preferred in the written language)
    b. I have not seen anybody (NC-reading, preferred in the spoken language)

The main idea in accounting for this puzzling semantic-pragmatic difference pursued is akin to Abraham (1999, 2000), explaining the emergence and use of certain grammatical forms as specific means of *oral* communication employed to facilitate parsing of sentences. Molnárfi analyses NC as a characteristic property of spoken vernaculars, arguing that spoken and written languages employ different strategies of information processing, which can affect the semantic interpretation of negation. A number of issues follow from this. Is negative concord indeed an instance of operator licensing in the spirit of the Negative Criterion (Haegeman 1995; Rizzi 1996) and as such morpho-syntactically driven? Or is it primarily semantically motivated, being inextricably intertwined with conflicting quantificational and negation requirements of weak indefinites in the sense of Weiß (1998, 1999)? One of the central assumptions of Molnárfi's is that negative concord, contrary to Haegeman (1995) and others, should not be captured in terms of a formal operator licensing mechanism. Neither will the semantic restriction with respect to indefiniteness made by Weiß (1998) be taken to be universal or seen as sufficient to account for the Afrikaans data. Rather, NC is analysed as an instance of top-down feature percolation, where silent copies of the first negator infiltrate all terminal nodes within the scope of negation. Written and spoken Afrikaans differ with

respect to the constraints that govern the morphological *spell-out* of the negation copies. Negative spread is only allowed in the spoken language, where the lexicalization of additional neg-copies can be exploited to signal scope dependencies and to identify discourse functional categories early in information flow. Molnárfi's conclusions also have a typological implication. In the spoken language, on-line scope interpretation can be considerably delayed, if the coda member of the negation bracket is in the domain of extraposition. Here the spell-out of additional negation copies, supported by appropriate prosodic correlates, can be exploited to correctly interpret negation scope and to identify rhematic elements early in information flow. The existence of such morphological discourse shibboleths seem to be particularly helpful in SVOV-languages such as German (and, with some reservations, Dutch), where the parser has to overcome a large structural space before identifying discourse status and grammatical functions, encoded into the coda position of the verbal bracket. Hence, multiple negation in Afrikaans is argued to be a specific form of top-down feature percolation in the scope domain of the first negator. The register-bound nature of such copy mechanisms can be justified as a parsing strategy: the online-processing and appropriate semantic interpretation of negation and rheme-domains have to be facilitated by morphological redundancy signals in the spoken, but not in the written language. In the written language, on the other hand, an economy condition on the identification of functional domains has to be respected, requiring that the opening and coda position of scope be marked non-redundantly within the same negation domain (Abraham 2000). Lacking the prosodic dimension of spoken vernaculars, the spell-out of *additional* NEG-copies will be taken to signal the opening of a new scope, leading to a *cancelling* interpretation of negation. As texts, unlike nonrecurring acoustic strings, can be easily reread, this mechanism suffices to achieve the correct interpretation of negation domains. In the spoken language, on-line scope interpretation can be considerably delayed, if the coda member of the negation bracket is in the domain of extraposition. Here the spell-out of additional negation copies, supported by appropriate prosodic correlates, can be exploited to interpret negation scope correctly and to identify rhematic elements early in information flow. In extreme cases, all silent negation copies can be spelled out, ensuring a maximal morphological identification of the negation and of the rhematic domain at PF. This, no doubt, supports Abraham's findings (1999, 2000) that spoken vernaculars employ specific (and partly grammaticalized) parsing strategies to overcome difficulties of on-line processing arising from the bracketing of compositional predicates. Exactly this kind of bracketing opens up a wide structural space of the middle field or the extended negation

scope to be exploited to identify discourse functional categories as thema and rhema in the SVOV-West Germanic.

Note

References

Abraham, Werner (1990). A note on the aspect-syntax interface. In J. Mascaró & M. Nespor (Eds.), *Grammar in progress. GLOW Essays for Henk van Riemsdijk* (pp. 1–12). Dordrecht: Foris.

Abraham, Werner (1994). *Deutsche Syntax im Sprachenvergleich. Grundlegung einer typologischen Syntax des Deutschen*. Tübingen: G. Narr. [Studien zur deutschen Grammatik 34]

Abraham, Werner (1997). The base structure of the German clause under discourse functional weight: contentful functional categories vs. derivative functional categories. In Werner Abraham & Elly v. Gelderen (Eds.), *German: syntactic problems – problematic syntax* (pp. 11–42). Tübingen: M. Niemeyer. [Linguistische Arbeiten 374]

Abraham, Werner (1998). The morphological and semantic classification of 'evidentials' and modal verbs in German: the perfect(ive) catalyst. *Groninger Arbeiten zur germanistischen Linguistik, 42*, 192–206.

Abraham, Werner (1999). How far does semantic bleaching go? About grammaticalization that does not terminate in functional categories. In Jan Tore Faarlund (Eds.), *Grammatical relations in change* (pp. 15–64). Amsterdam: John Benjamins. [Studies in Language Companion Series 56]

Abraham, Werner (1999). Präteritumschwund in German: The parsing trigger. In Werner Abraham (Ed.), *Characteristic properties of spoken vernaculars.* Guest edited issue. *Folia Linguistica, 33*(1), 39–58.

Abraham, Werner (2000). Mehrfachnegation im Deutschen und im Afrikaans. In Susanne Beckmann, Peter-Paul König, & Georg Wolf (Eds.), *Sprachspiel und Bedeutung. Festschrift für Franz Hundsnurscher zum 65. Geburtstag* (pp. 221–226). Tübingen: M. Niemeyer.

Abraham, Werner & Lásló Molnarfi (2002). German clause structure under discourse functional weight: Focus and antifocus. In Werner Abraham & Jan-Wouter Zwart (Eds.), *Issues in formal German(ic) typology* (pp. 1–44). Amsterdam: John Benjamins. [Linguistik Aktuell/Linguistics Today 45]

Abraham, Werner, Samuel Epstein, H. Thráinsson, & Jan-Wouter Zwart (Eds.). (1996). *Studies in Minimalism.* Amsterdam: John Benjamins. [Linguistik Aktuell/Linguistics Today 12]

Akmajian, Adrian (1977). The complement structure of perception verbs in an autonomous syntax framework. In Thomas Wasow (Ed.), *Formal syntax* (pp. 427–460). New York: Academic Press.

Bayer, Josef & Jacklin Kornfilt (1994). Against scrambling as an instance of Move alpha. In Norbert Corver & Henk van Riemsdijk (Eds.), *Studies on scrambling* (pp. 17–60). Berlin: Mouton de Gruyter.

Blutner, Reinhard (2000). Some aspects of optimality in natural language interpretation. *Journal of Semantics, 17,* 189–216.

Brody, Michael (1990). Some remarks on the focus field in Hungarian. *UCL Working Papers in Linguistics, 2,* 201–225.

Burzio, Luigi (1986). *Italian syntax. A Government-Binding approach.* Dordrecht: Kluwer.

Cecchetto, Carlo, Gennaro Chierchia, & Maria Teresa Guasti (Eds.) (2001). *Semantic interfaces. Reference, anaphora, and aspect.* Chicago: CSLI.

Chomsky, Noam (1981). *Lectures on government and binding.* Dordrecht: Foris.

Chomsky, Noam (1993). A minimalist program for linguistic theory. In Ken Hale & Samuel J. Keyser (Eds.), *The View from Building, 20* (pp. 1–52). Cambridge, MA: MIT-Press.

Chomsky, Noam (1995). *The Minimalist Program.* Cambridge: MIT Press.

Cinque, Guglielmo (1993). A null theory of phrase structure and compound stress. *Linguistic Inquiry, 24,* 239–297.

Cook, Philippa (2001). Coherence in German. an information structure approach. Unpublished Dissertation, Manchester.

De Kuthy, Cordula (2000). Discontinuous NPs in German. A case study of the interaction of syntax, semantics, and pragmatics. Unpublished dissertation Universität Saarbrücken.

Dixon, Robert M. W. (1995). *Ergativity.* Cambridge: CUP. [Cambridge Studies in Linguistics 69]

Erteschik Shir, Naomi (1997). *The dynamics of focus structure.* Cambridge: CUP.

Fanselow, Gisbert (2003). Zur Generierung der Abfolge der Satzglieder im Deutschen. Ms. Universität Potsdam.

Foolen, Ad (2002). Review of Newmeyer 1998. *Functions of language, 9*(1), 87–103.

Giorgi, Alessandra & Fabio Pianesi (1997). *Tense and aspect.* Oxford: OUP.

Grimshaw, Jane (1997). Projection, heads, and optimality. *Linguistic Inquiry, 28,* 373–422.

Haegeman, Liliane (1995). *The syntax of negation.* Cambridge: University Press.

Hale, Ken & Jay Keyser (1993). On argument structure and the lexical expression of syntactic relations. In Ken Hale & Samuel Keyser (Eds.), *The View from Building, 20* (pp. 53–109). Cambridge, MA: MIT Press.

Höhle, Tilman N. (1982). Explikation für "normale Betonung" und "normale Wortstellung". In Werner Abraham (Ed.), *Satzglieder im Deutschen. Vorschläge zur syntaktischen, semantischen und pragmatischen Fundierung* (pp. 75–154). Tübingen: G. Narr. [Studien zur deutschen Grammatik Bd. 15]

Hornstein, Norbert (1984). *Logical form.* Cambridge, MA: MIT-Press.

Hornstein, Norbert (1995). *Logical form. From GB to Minimalism.* Oxford: Blackwell.

Meinunger, André (2000). *Syntactic aspects of topic and comment.* Amsterdam: J. Benjamins. [Linguistik Aktuell/Linguistics Today 38]

Molnárfi, László (2000). Focus and Antifocus in Afrikaans and West-Germanic In P. Baker, A. Hardie, T. Mcenery, & A. Siewierska (Eds.), *Proceedings of the Discourse Anaphora and Reference Resolution Conference (DAARC2000), UCREL Technical Papers, 12* (pp. 223–237).

Molnárfi, László (2001). Die Negationsklammer im Afrikaans – Mehrfachnegation aus formaler und funktionaler Sicht. In Werner Abraham & Jan-Wouter Zwart (Eds.), *On formal German(ic) typology.* Amsterdam: John Benjamins.

Newmeyer, Frederick J. (1998). *Language form and language function.* Cambridge, MA: MIT Press.

Peeters, Bert (2002). Review of Reuland (Ed.) 2000. *Studies in Language, 26*(3), 681–690.

Pesetsky, David (1998). Some optimality principles of sentence pronunciation. In Pilar Barbosa, Danny Fox, Peter Hagstrom, Mary McGinnis, & David Pesetsky (Eds.), *Is the Best Good Enough?* (pp. 337–383). Cambridge, MA: MIT-Press.

Pili, Diana (2000). On A- and A'-dislocation in the left periphery. Unpublished dissertation, Universität Potsdam.

Ponelis, F. A. (1991). *Afrikaanse sintaksis.* Pretoria: van Schaik.

Rebuschi, Georges & Laurice Tuller (Eds.). (1999). *The grammar of focus.* Amsterdam: John Benjamins. [Linguistik Aktuell/Linguistics Today 39]

Reuland, Eric J. (Ed.). (2000). *Arguments and case. Explaining Burzio's Generalization.* Amsterdam: John Benjamins. [Linguistics Today/Linguistik Aktuell 24]

Rooth, Mats (1992). A theory of focus interpretation. *Natural Language Semantics, 1*, 75–116.

Rizzi, Luigi (1996). Residual verb second and the *wh*-criterion. In A. Belletti & L. Rizzi (Eds.), *Parameters and functional heads* (pp. 63–90). Oxford: Oxford University Press.

Rizzi, Luigi (1997). The fine structure of the left periphery. In Liliane Haegeman (Ed.), *Elements of grammar: Handbook of generative syntax* (pp. 281–337). Dordrecht: Kluwer.

Tenny, Carol & James Pustejovsky (Eds.) (2000). *Events as grammatical objects. The converging perspectives of lexical semantics and syntax.* Chicago: CSLI.

Travis, Lisa (2000). The L-syntax/s-syntax boundary. *Formal Issues in Austronesian Linguistics*, 167–194.

Weiß, Helmut (1998). *Syntax des Bairischen. Studien zur Grammatik einer natürlichen Sprache.* Tübingen: Niemeyer.

Weiß, Helmut (2001). On two types of natural languages. Some consequences for linguistics. *Theoretical Linguistics, 27*, 27–103.

PART I

Mapping syntactic structure to meaning

Coordination in morphology and syntax

The case of copulative compounds

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1. Introduction

This article is concerned with coordination in morphology and syntax whereby the main emphasis of the discussion will be placed on coordination in morphology, in particular as it is exemplified in the form of copulative compounds.[1] Descriptive studies of word formation in Germanic generally follow the early grammarians of Sanskrit in classifying compounds according to the major patterns given in (1):

(1) a. *computer monitor*   determinative
     b. *bonehead*   possessive
     c. *bartender-psychologist*   copulative

Determinative compounds are characterized by a subordinate relation in which the first constituent modifies the second constituent which functions morphosyntactically and also semantically as the head of the construction: A *computer monitor* denotes a special kind of 'monitor', namely one 'for' a 'computer'. Possessive compounds follow the modifier-head relation of the determinative pattern formally but derive their meaning by extending their semantics to a third entity: *bonehead* doesn't actually designate a 'head of bone' but rather a 'person' possessing a 'head of bone' (i.e. lacking grey matter; a dunce). Copulative compounds, on the other hand, encompass a coordinative relation between the two constituents such that both concepts are predicated equally of the same referent. A *bartender-psychologist*, therefore, refers to someone who is both a 'bartender' and a 'psychologist'. For the major compound patterns[2] then the relationship between the constituents of a compound can be either subordina-

tive – as with determinatives (and possessives) – or coordinative – as in the case of copulatives.

This discussion intends to show that both the determinative and copulative patterns are productive in Present-Day English and can in fact be explained from a theoretical perspective as different semantic options taken on the basis of a general morphological 'template' which characterizes the class of compounds in the lexicon. This view of composition provides important insights into the nature of morphological structure relevant to the theory of grammar: As the theory of syntax has become increasingly abstract over the past years, a number of linguists have attempted to extend the abstract principles of syntax (e.g. case and theta theory, merger, adjunction, head movement, etc.) to the field of morphology as well.[3] It will be argued here that for at least one large and well-studied area of word formation (i.e. composition), morphology must be considered its own field, governed by its own regularities and subject to restrictions that differ in crucial ways from those characterizing syntactic phrases.

2.   Coordination in syntax and morphology

Copulative compounds display by definition a coordinative relation between their components. In what sense are they similar to or different from related syntactic coordinations? The coordination of referential determiner phrases (DPs) at the syntactic level generally results in plural formation by means of the enumeration of a group of individuals as shown in (2a). Coordination at the morphological level, on the other hand, subserves word formation; it forms a new lexical stem as a means of denoting a single, complex concept, cf. (2b):

(2)   a.   *The poet and (the) translator were present at the lecture.*
       b.   *The poet-translator was present at the lecture.*

Upon closer consideration, however, the relationship between syntactic and morphological coordination cannot be this simple. As, Quirk (1985:760ff.), Hoeksema (1987), Lang (1991) and others have pointed out, there apparently exists a close syntactic counterpart to copulative compounds found in so-called "coordinative appositions" such as those shown in (3). The singular verb form in (3a) makes it clear that the coordinated phrase in subject position is singular, denoting a single individual. Furthermore, this same coordinative DP can also occur in apposition to a singular head noun as in (3b).

(3) a. *The poet and (the) translator was present at the lecture.*
     b. *Austin Thomas, (the) poet and (the) translator, was present at the lec-*
         ture.

Such coordinative appositions are obviously related to copulative compounds, but there is a crucial distinction between the two constructions: The predicates used in the creation of a copulative compound join together to form a complex concept to be anchored in our ontological system of individuals. Coordinative appositions, on the other hand, merely assert a number of (possibly distinct) properties about one individual. The essential difference between coordinative appositions on the one hand and morphological copulatives on the other is contrasted in the examples in (4), where we see that it is possible to construe a series of arbitrary predicates as being in apposition to a head noun as in (4a), but it is still not possible to conceptualize a new complex entity made up of these same predicates as required by the formation of a copulative compound:

(4) a. *Henry Kissinger, diplomat and lightning rod, returns to the corridors of*
         power.
     b. **The diplomat-lightning rod returns to the corridors of power.*

The problem with (4b) is that the concepts 'diplomat' and 'lightning rod' cannot unify to pick out a single coherent individual in our ontological system of objects. The denotation of a word is obviously subject to a fundamental cognitive restriction of ontological coherence that doesn't apply to the formation of syntactic phrases. This principle can be formulated as follows:

(5) Principle of Ontological Coherence
     A complex concept as the denotation of a morphological object[4] picks out
     a coherent individual from one of the domains of individuals.

3. The compound template

In the view to be proposed in the following discussion, the lexical system of grammar encompasses a formal pattern of compounding conforming to the basic scheme given in (6a): A stem belonging to one of the open (i.e., lexical) word classes of the lexical system may combine with another such stem to form a complex 'headed' configuration where the resulting construction takes on the categorial and morphosyntactic features of the second stem (i.e., the head). Recursion is introduced into the scheme if either stem is complex. The semantic counterpart to the formal scheme of (6a) is given in (6b) which basically char-

acterizes the two predicates P and Q that make up a compound as standing in an implicit relation R to one another. Together (6a) and (6b) constitute a lexical template by which novel compounds can be formed.

(6)   Compound Template:
   a. $[[Y] [X]]_X$ where Y, X a lexical stem
   b. $\lambda P \, \lambda Q \, \lambda x \, \exists y \, [R(x, y) \, \& \, P(x) \, \& \, Q(y)]$

The theoretical framework I am assuming here is the theory of 'Two-Level Semantics' first developed by Bierwisch (1983) and (1988) and Bierwisch and Lang (1989).[5] This theory assumes that meaning is best accounted for by adopting two distinct levels of semantic representation. A grammatical level of lexical-semantic representation termed "semantic form" (SF) – formulated in terms of the functor-argument structure of categorial grammar – is strictly compositional in nature and contains only the information necessary for mapping the invariant aspects of meaning directly onto the configurational structures of grammar. The decompositional nature of SF as seen in (6b) renders the semantic makeup of linguistic expressions transparent, thereby offering a principled basis for their combinatorial properties. "Conceptual structure" (CS), in contrast, is a more highly articulated level of representation, which accommodates the contextually dependent aspects of meaning as well as conceptual inferences that guarantee an appropriate utterance meaning for the expression. As an extra-linguistic, conceptual level of representation, CS is not limited to the strictly grammatical information encoded in SF but draws on further knowledge structures.

   The template in (6b) is intended to capture the basic context-independent, lexical-semantic (i.e. SF) representation of a regular compound structure. The context-dependent meaning components that a given compound actually takes on in the context of its use (i.e., its CS representation) arise via the instantiation of parameters left open in its SF. A case in point is the underspecified relation R on which the compound template in (6b) is based. The variable R reflects the insights of Dowty (1979), Downing (1977), Günther (1981), Selkirk (1982) and others who have worked on composition. They have argued that the implicit relation between the two constituents of a compound is grammatically open and is basically a function of the compound's use in a particular context. Dowty (1979:316), for example, uses a similar representation for the semantic structure of compounds in which an underspecified variable for the implicit relation is characterized as 'appropriately classificatory'. The variable R of (6b) has a similar function; it encodes an open parameter in SF that must be instan-

tiated by a specific relation in CS whose content is either predictable from the meaning of the compound's constituents (cf. Fanselow 1981) or can be inferred from a particularly salient aspect of the linguistic context in which the expression is used (cf. e.g. Boase-Beier & Toman 1987 and Meyer-Klabunde 1996). When applied to the semantic representation of the compound's constituents, the template in (6) yields the output representation of the grammatical system – an SF which must be mapped onto a CS in order to be fully interpretable. The crucial point is that the grammatical (i.e. SF) representation for both determinative and copulative compounds originates from a single template as formulated in (6).

4. Instantiation of determinative and copulative readings

The formation of a determinative reading for a compound such as *computer monitor* proceeds as follows. The SF template – repeated in (7a) – is applied functionally to the meaning of the head constituent (i.e. 'monitor') and then to the meaning of the non-head ('computer'). The relevant predicates are thereby bound into the formula in place of the predicate variables P and Q, respectively. Each step of functional application is followed by internal lambda conversion.

(7) SF of *computer monitor*
  a. $\lambda \cancel{P} \lambda Q \lambda x \exists y [R(x, y) \& \cancel{P}(x) \& Q(y)] \lambda u [MONITOR(u)]$
  b. $\lambda Q \lambda x \exists y [R(x, y) \& \lambda \cancel{u} [MONITOR(\cancel{u})](x) \& Q(y)]$
  c. $\lambda \cancel{Q} \lambda x \exists y [R(x, y) \& MONITOR(x) \& \cancel{Q}(y)] \lambda w [COMPUTER(w)]$
  d. $\lambda x \exists y [R(x,y) \& MONITOR(x) \& \lambda \cancel{w} [COMPUTER (\cancel{w})](y)]$
  e. $\lambda x \exists y [R(x, y) \& MONITOR(x) \& COMPUTER(y)]$

The resulting representation in (7e) represents the invariant meaning of the compound, i.e. the output of the lexical-semantic system of the grammar. In order to account for the actual utterance meaning of the compound, it must be mapped onto a more explicit conceptual structure in which the underspecified relation R is given explicit content. One particularly plausible instantiation of R in this case is the 'part-of' relation. Based on this relation, the CS in (8) characterizes the denotation of the compound *computer monitor* as "a property of x, where x is in the extension of the predicate 'monitor' and stands in the 'part-of' relation to an instance of the predicate 'computer'".

(8) CS of *computer monitor*
     λx ∃y [PART_OF(x, y) & MONITOR(x) & COMPUTER(y)]

As a morphological object, the compound *computer monitor* denotes a property of a single individual as indicated by the lambda expression λx. The existential quantifier binding the variable y indicates that the first constituent of the compound is not referential but functions as a sortal modifier restricting the meaning of the head constituent.

     Let us turn now to the case of coordination at the morphological level. In the case of *bartender-psychologist*, applying the SF template in (9a) to the meaning of the compound's constituents will derive the SF shown in (9b). This SF will in principle allow any salient relation to hold between the head concept 'psychologist' and the non-head concept 'bartender'. The compound *bártender psychólogist*[6] can therefore take on a number of determinative senses along the lines of those given in (10), e.g., 'a psychologist for a bartender', 'one that treats a bartender', 'one who looks like a bartender' and so on.

(9) SF *bartender psychologist*
     a.   λP λQ λx ∃y[R(x, y) & P(x) & Q(y)]
     b.   λx ∃y[R(x, y) & PSYCHOLOGIST(x) & BARTENDER(y)]

(10) Determinative Senses of *bártender psychólogist*
     a.   R = FOR   psychologist for a bartender
     b.   R = TREAT   psychologist that treats a bartender
     c.   R = LOOK_LIKE   psychologist who looks like a bartender
     d.   ....

Here the advantages of the general template as formulated in (6) become clear: Novel compounds are indeed correctly characterized grammatically by an open relation that in principle allows for a wide variety of possible instantiations depending on the context of use. This justifies the occurrence of the underspecified variable R in the SF of a novel compound which must be instantiated by a specific relation in CS along the lines indicated in (8) and (10).

     The question now is how the copulative reading of *bártender psychólogist* arises. When the underspecified relation R is instantiated by the identity relation, the result is the reading given in (11a), namely "for a property x in the extension of the predicate 'psychologist' and an instance y of the predicate 'bartender', x and y refer to the same individual".[7]

(11)   Copulative sense of *bártender psychólogist*
   a.   λx ∃y[= (x, y) & PSYCHOLOGIST(x) & BARTENDER(y)]
   b.   λx [PSYCHOLOGIST(x) & BARTENDER(x)]

The CS (11a) is equivalent to and hence reduces to the representation in (11b), where a coordination of predicates at the morphological level becomes clear. The result is in accord with the principled cognitive restriction limiting a complex concept underlying a word meaning to the denotation of a single, coherent individual. In (11b) both predicates are predicated of one and the same object x. The Principle of Ontological Coherence (POC) as formulated in (5) guarantees that a complex concept as the denotation of a possible word will denote an individual that can be anchored in our ontology of individuals. It thus reflects a fundamental insight from psychology stemming from the 1970s (cf. Clark & Clark 1977) that a complex concept cannot incorporate Boolean conditions in its internal structure and hence cannot be based on such functions as group formation, disjunction or negation. The POC is thus obeyed by the mapping of the SF in (9b) onto the CS shown in (11b) when the relation chosen is the identity relation.

    Interestingly, a principled difference comes to light in this connection between the coordination of two predicates used in the formation of a complex concept as (11b) and coordination at the syntactic level. As noted by Hoeksema (1987:30), coreferential noun phrases cannot be conjoined in syntax, since coordination at this level entails group formation which is not defined in the case of x = y. Informally spoken: a single individual cannot constitute a group.[8]

(12)   Restriction on Syntactic Coordination after Hoeksema (1987:30)
        "Coreferential NPs cannot be conjoined. The reason is that the group consisting of some individual a, a and a is not defined ..."

In contrast to syntactic coordination, a complex concept made up of the coordination of two or more predicates constituting the potential denotation of a word does (in fact: must) apply to the same individual. The POC in essence forces the variables instantiating the predicates in (11a) to refer to the same individual. Since our ontology of objects doesn't allow an inanimate thing to be unified with an animate being into a single new object, the combination *diplomat-lightning rod* of (4c) is automatically ruled out for principled cognitive reasons, namely that it will violate the POC. The POC is obeyed in the case of the determinative compound *computer monitor* in (8) on the other hand, since the complex concept at issue in this case has a coherent denotation as a subtype of 'monitor'. The POC being a statement about the legitimate structure

of a complex object as a possible referent of a word meaning has nothing to say, on the other hand, about a series of properties predicated of a given individual at the syntactic level such as '*artist and instrument*' in (4a) and (4b).

5.   Copulative 'compounds' in Sanskrit

As mentioned at the outset, copulative 'compounds' played a central role in the grammar of Sanskrit. In Sanskrit, copulatives are marked with either a dual or a plural morpheme and refer accordingly to either a group of two or a group of three or more individuals, cf. Whitney (1962). For example, the construction in (13a) denotes a group of two entities consisting of an elephant and a horse, while the same stem combination in (13b) with a plural marker in place of the dual morpheme on the final stem denotes a group of at least three elephants and horses.

(13)   a.   *hastyaçvau*
            elephant (*hastin*) + horse (*açva*-dual)
            'the elephant and horse'
        b.   *hastyaçvas*
            elephant (*hastin*) + horse (*açva*-plural)
            'elephants and horses'

If we adopt Hoeksema's (1987) view of conjunction as group formation, the denotation of (13a) would be the group indicated in (14a) and (13b) would entail different options, some of which are indicated in (14b):

(14)   a.   {e, h}
        b.   {e_i, e_j, h}, {e, h_i, h_j}, {e_i, e_j, e_k, h}, {e_i, e_j, e_k, h_i, h_j}…

Fanselow (1985), in his study of nominal compounds, points out this difference in meaning between copulative 'compounds' in Sanskrit (termed 'dvandvas' in Sanskrit grammar) and equivalent structures in German. Whereas copulatives in Sanskrit consistently denote a dual or plural group of individuals, similarly constructed compounds in German (or, for my purposes here, English) cannot refer to a set of individuals, but only to one individual which exemplifies the two predicates named in the compound. The English example *elephant-horse* in (15a), for instance, carries the meaning represented in (15b) – not that of (14a). I.e. it denotes the property comprising the properties of both elephants and horses.

(15) a. *elephant-horse*
      b. λx [HORSE(x) & ELEPHANT(x)]

Interestingly, copulatives of the form attempted in (16) are not possible in Germanic.[9]

(16) a. **Gore-Lieberman*
      b. **Rhine-Main-Danube*

Fanselow attempts to explain this by appealing to the type-meaning correlation of Montague grammar, the framework within which he was working. In Montague grammar the logical type of an expression is strictly correlated with its meanings and, hence, restricts the possible denotations of the expression. Since the basic form of a copulative in German and English is singular, it must correlate with a singular meaning. However, the combination of stems in (16) obviously need to refer to a group of two or three individuals, hence they are not possible. Fanselow notes, however, that there are environments of neutralization where the strict correlation between logical type and meaning is relaxed. One such environment is the front form of a compound as illustrated in (17) where an apparently plural form *Eier* denotes a single individual and an apparently singular form (*Buch*) clearly conveys a meaning of plurality.

(17) a. *Eierschale*   'egg shell'
      b. *Buchhandlung*   'book store'

Since the front forms of compounds are formally ambiguous with respect to the singular-plural distinction, both the singular and the plural interpretation are possible in this case without violating the type-meaning correlation fundamental to Montague semantics. Fanselow uses this idea to explain why the ill-formed compounds in (16), formally singular and therefore unable to stand on their own in a plural meaning, are nevertheless well formed, when they occur as front forms with a plural meaning, shown in (18).

(18) a. *Gore-Lieberman electors*
      b. *Rhine-Main-Danube Channel*

Fanselow states this idea as follows, which I will refer to in the following discussion as 'Fanselow's Prediction':

(19) Fanselow's Prediction (1985:302)
      Where a form such as the front form of a compound does not have a fixed value for some semantically relevant feature such as [± singular], the set

of its denotata is the union of the classes of logical types determined by any choice of a value for that feature.

Fanselow's Prediction leads us to expect that we should find the group formation typical of Sanskrit copulatives as front forms of complex compounds in English as well. In the next paragraph I will show, however, that English copulatives denote a complex concept subject to the POC in accordance with our assumptions up to now, not a group plural. The examples in (18) are not exceptions to this fundamental generalization, but simply exemplify a different class of construction. A compound embedded under a head noun will conform to the semantic requirements of the head noun on which the interpretation of the whole compound depends. This idea will become clearer as soon as we turn to the English data in the next section.

6.   Semantic properties of copulative compounds in English

6.1   True copulatives

Let us look first at unembedded copulative constructions. My corpus contains only a few copulatives denoting things:[10]

(20)   *camper-trailer, washer-dryer, bird shelter-feeder, theater-museum, murder-robbery*

By far the most productive semantic pattern designates people by virtue of their professions. These patterns center semantically around business, entertainment, education, journalism, computer science and art, with a small group of other more diverse possibilities. Such copulatives can consist of two (*fiddler-guitarist*), three (*listener-viewer-reader*), four (*surgeon-linebacker-artist husband*) and even five (*broker-dealer-investment banker-adviser-owner*) constituents in a coordinative relation, cf. also Olsen (2001).

(21)   a.   Business:
       banker-businessman, managing director-chief financial officer, broker-analyst, engineer-manager, dealer-manager, partner-lobbyist, director-vice president, company founder-president, farmer-lawmaker, lawyer-negotiator, ranger-naturalist, worker-beneficiary, manufacturer-shipper
       b.   Entertainment:
       filmmaker-playwright, artist-writer-film creator, publisher-executive director, listener-viewer-reader, pop singer-restaurateur, movie star-singer,

performer-songwriter, bandleader-arranger, soap star-pop singer, fiddler-guitarist, dancer-aerialist, conductor-witchdoctor, composer-vocalist, actor-vaudevillean

c. Education:
teacher-researchers,[11] teacher-interpreter, teacher-principal, scholar-educator, scholar-deputy, beggar-students, professor-consultant

d. Writing:
author-detective, narrator-protagonist, opposition leader-playwright, reporter-narrator, author-philosopher, editor-interpreter, author-chef, author-cartoonist, poet-bard, magazine researcher-reporter, interpreter-translator

e. Computer Science:
hacker-programmer, reader-users, user-programmer, supervisor-user, customer-user

f. Art:
painter-pop artist, developer-architect, designer-builder, chief sculptor-engraver, curator-coordinator

g. Other:
chiropractor-veterinarian, bouncer-doorman, barber-surgeon, mayor-barber, killer-rapist, victim-hero

Furthermore, a profession is often found together with a kinship term in head position:

(22) Kinship:
(*his*) *engineer-father, college professor mom,* (*her*) *surgeon-linebacker-artist husband,* (*the artist's*) *business manager-wife, lawyer-brother, dancer-girlfriend*

The crucial point to be noted in this connection is that in all these cases of unembedded copulatives, a complex nominal stem establishes the identity of one ontologically coherent individual via the combination of two or more salient concepts used to identify the individual in accord with the compound template in (6b) and the POC in (5).

6.2 Copulatives as front forms

Let us look now more closely at the semantic properties of copulatives occurring as front forms of more complex compound stems. In contrast to 'Fanselow's Prediction', we don't observe true plural formation in this puta-

tively 'neutral' environment. Instead, the embedded compound conforms to the meaning required by the semantic properties of its head.

For reasons of space, I will limit attention here to the two most productive patterns of data in my corpus. The first group of examples are characterized by a relational head that requires a complex argument whose component parts stand in the 'between' relation to the head. For instance, (23a) can be rendered more explicitly as (23b):

(23) a. *lawyer-client relationship*
      b. *relationship between a lawyer and a client*

The examples in (24) all follow this pattern as well.

(24) 'between'
      conservative-liberal split, doctor-patient gap, father-daughter relationship, programmer-musician connection, lawyer-client talks, producer-consumer talks, teacher-pupil ratio, worker-employer disputes, worker-employer conflict, supervisor-employee interaction, computer-human interaction, mother-infant bonding, car-pedestrian accident, teacher-student sexual contact, investor-broker case, parent-teacher association, Chrysler-Daimler merger

A wide variety of different heads can be found in this argument position. We find *conservative-liberal split* and *doctor-patient gap* on the one hand, where the notions 'split' and 'gap' denote a cleavage between the component parts of their complex argument – certainly not their union into a group. Furthermore, even concepts like 'talks', 'bonding', 'disputes' denote specific types of interactions between the individual component parts of their complex arguments, not group formation. More abstract heads like 'ratio', 'case' and 'association' can also be found. But even in the case of 'merger' as in *Chrysler-Daimler merger* we are not witnessing genuine group formation of Chrysler and Daimler, but rather the fusion of two companies into a new complex individual.

None of these cases, then, can be characterized as group formation via an enumeration of individuals as Fanselow's prediction would lead us to expect. The compounds in front position all fulfill specific argument requirements of the semantic properties of the head on which their interpretation depends. For instance, the lexeme 'gap' denoting an opening – abstract or concrete – between two objects can be assigned a lexical entry along the lines of (25). The two constituents of the compound front form can be seen to saturate the argument positions y and z of the head at the morphological level:[12]

(25)   SF of *gap*
       λz λy λx ∃u [OPENING(x) & LOC(x) & BETWEEN* (x, u) & u = y + z)]

A similar situation can be found where collective nouns as heads of the construction embed a compound as a front form. Collective nouns are grammatically singular terms whose meaning entails a collection of other elements. The elements constituting the collective term can be named by the constituents of the front form. For example, a 'duo' made up of a 'mother' and a 'daughter' is a *mother-daughter duo* and a 'mixture' made up of 'water' and 'alcohol' is a *water-alcohol mixture*.

(26)   Collection:
       mother-daughter duo, water-alcohol mixture, owner-employee company, dealer-broker firm, a worker-peasant state, teacher-parent council, parent-teacher-principal school management committee, producer-user consortium, copier-scanner-facsimile combination, broker-dealer unit

Since nouns like 'duo' and 'mixture' etc. are not actually relational in a grammatical sense, a conceptual operation must be possible allowing an inference from a term denoting a collection to the elements that constitute the parts of the collection (cf. the ELT function of Jackendoff 1991). This inference is formalized as a meaning postulate in (27), where the concept 'duo' implies two parts or members y and z.

(27)   a.   λx [DUO(x)]
       b.   λx [DUO(x)] → element_of(x, y) & element_of(x, z)

Consequently, embedded compounds such as those in (24) and (26) don't constitute plural formation, but function rather as complex arguments in precisely the interpretation required and, hence, also licensed by the meaning of the head. The head can be relational semantically as in the case of 'gap' in (25) or can allow a conceptual inference from a collection to its constituent parts as in (27). The crucial point is that this type of interpretation is always triggered by a head; such meanings never occur alone.

Furthermore, the meaning that we have isolated for unembedded copulatives – that of a complex concept denoting an ontologically coherent individual – is also possible in embedded environments, cf. (28):

(28)   *innatist-selectivist assumption, speaker-hearer competence,* (one-person) *writer-producer companies, computationalist-representationalist position*

An *innatist-selectivist assumption* is an assumption made by an 'innatist-selectivist' (that is, one individual) and *speaker-hearer competence* refers to the 'competence' of a 'speaker-hearer'. Furthermore, ambiguities are possible documenting the reality of the two distinct interpretations: An *educator-scientist commission*, for example, can have both readings in (29):

(29)   *educator-scientist commission*
    i.   commission of educators and scientists
    ii.   commission of educator-scientists

7.   Conclusion

Upon closer inspection then, Fanselow's Prediction doesn't capture the true essence of the problem under discussion. The point is not that a particular environment of neutralization releases the restriction against plural formation, enabling the group reading found in Sanskrit copulatives to surface in English as well. What is at issue here, rather, is the nature of morphological objects and their possible denotations. A group reading results from the coordination of referential noun phrases at the level of syntax. The copulative compounds of Germanic are, however, morphological and not syntactic structures in which the identity relation is instantiated between the external arguments of the constituent predicates in the underlying semantic representation of the expression. The result is a complex property made up of coordinated predicates that serves as the basis for a noun meaning. The conceptual conditions on a possible noun meaning are quite strict as we can see from contrasting a copulative with a so-called coordinative apposition. The Principle of Ontological Coherence demands that the unification of predicates in a copulative establish a complex property that can identify an individual object in the human ontological system, thus guaranteeing the potential referentiality of the newly created complex noun. At the syntactic level of coordination, on the other hand, there is much more freedom in the type of predicates that can predicate additional properties via apposition of a referent that has been established independently by another coherent referential expression, cf. *Henry Kissinger, diplomat and lightning rod, returns to the corridors of power* vs. **The diplomat-lightning rod returns to the corridors of power.*
    A further piece of evidence that Fanselow's Prediction is not on the right track is that a group meaning is predicted to be possible in the first constituent of a multi-stem copulative:

(30)   *composer-pianist-singer*

A compound such as (30), however, can never be understood as a 'singer' together with a 'composer' and a 'pianist', that is as a collection of three individuals. So the predication fails here as well.

The overall result of this study is, then, that copulative compounds in English are genuine morphological structures which instantiate the identity relation shown in (11) resulting in the coordination of two (or more) predicates which, by virtue of their status as properties of a single individual, are subject to the POC. This pattern is found in all unembedded cases of copulative compounds and occurs in embedded positions as well (cf. (28) and (30)). The only exception to the individual reading of copulatives dictated by the POC is when an apparent coordination of predicates occurs in a position subordinate to a (semantically or conceptually) relational head such as those discussed in (25) and (27) above. In such a case, the embedded predicates will be incorporated into the argument structure of the head and the resulting interpretation is no longer subject to the POC, but rather licensed by the semantics of the head expression (which itself is, of course, subject to the POC).

The copulative interpretation is by far the most regular and systematic of all the compound types. This undoubtedly stems from the default nature of the identity relation that holds between the two predicates. When no determinative relation – anchored in either the context of use or resulting from inferences made on the basis of the predicates involved – presents itself, the identity relation is available. The copulative reading is, therefore, the least dependent on the linguistic or situational context and hence the most neutral of any of the possible instantiations of the variable R in (6b). It is subject to only one restriction of a fundamental conceptual nature, namely the POC, which guarantees the principal referentiality of the resulting complex noun.

Why, then, do the Sanskrit copulatives deviate so strongly from the principled picture we have found in English? One possible answer to this question might be that they perhaps aren't true morphological structures, but rather remnants of minimal asyndetic coordinations at the syntactic level in a language that had no overt determiners. It isn't possible for me to go into reasons here why this might be the case,[13] but note that Sanskrit copulatives only occur in non-stem (i.e. inflected) forms. The fact that they must be marked with a dual or plural morpheme points to some type of syntactic origin. If the hypothesis of their basic syntactic nature can indeed be sustained by further study of this phenomenon, their meaning would be explicable: The distinction between the group meaning of copulatives in Sanskrit and the individual reading

of copulatives in English would then be a direct reflection of the syntactic vs. morphological status of the construction in the two languages.

Notes

1. For valuable discussion on the ideas developed here, I would like to thank Gert Booij, Nicole Dehé, David Dowty, Ray Jackendoff, Holden Härtl, Klaus von Heusinger, Ewald Lang, Claudia Maienborn, Andrew McIntyre and Ilse Zimmermann. This article is dedicated to Peter Eisenberg.

2. There are also minor patterns of less productive compound-like structures, cf. for instance phrasal compounds (*ladies-that-lunch crowd, winner-take-all struggle, behind-the-scene effort*), neo-classical compounds (*tele + scope, bio + graphy, auto + toxin, lexic + ology*), blends (*coco-colanize, slanguage, gundamentalist*), affixoids (*water + proof, trust + worthy, lone + some, cross + wise*), verb-object structures (*scarecrow, sawbones, killjoy*) as well as sentence words (*ne'erdowell, havenots, speakeasy*) that display their own peculiarities.

3. E.g., Baker (1988), Chomsky (1995), Halle and Marantz (1993), Hale and Keyser (1993), Koopman (1995), Lieber (1992), Sproat (1985), Toman (1987) among others.

4. This notion is to be understood in the sense defined by DiSciullo and Williams (1987).

5. This theory has been further elaborated by Wunderlich (1991), (1993) and (1997), Wunderlich and Herweg (1991), Herweg and Maienborn (1992), Maienborn (1996), Stiebels (1996), Dölling (1998), Härtl (2001) among others.

6. For discussion of the differing accent patterns characterizing determinative and copulative compounds cf. Olsen (2000a) and (2000b).

7. For discussion on this point I thank Claudia Maienborn. Cf. Meyer-Klabunde (1994) for a similar formalization of the copulative relation by means of the identity function.

8. Partee, ter Meulen and Wall (1990:6) also make it clear that a single individual cannot occur more than once in a given set.

9. Note that copulatives containing proper nouns of the form *Mecklenburg-Vorpommern, Daimler-Chrysler, AFL-CIO, CDU-CSU* etc. do exist in both English and German, but they carry the meaning expected here of one individual (a federal state, an automobile company, a union, a political party) made up of two equal sub-units.

10. The copulative constructions on which this discussion is based have been compiled from the corpus entitled Tipster Research Collection Vol. 1, 1994, annotated by Gerhard Heyer and Uwe Quasthoff at the University of Leipzig. These particular constructions were taken from newswire reports from 1989 and are listed in their entirety in the appendix. For assembling this group of constructions for me I thank Anja Römhild. This study complements Olsen (2001), which discusses a similar large base of productive copulatives from different sections of the same corpus.

11. The plural is marked on the final constituent only (cf. *teacher-researchers, beggar-students, reader-users* etc.) offering further evidence for the lexical status of the copulative

formation; the compound structure is a morphological object formed at a level opaque to syntactic plural marking.

12. The meaning of 'between' is construed in (25) as follows: The constant BETWEEN maps the entities y and z onto an abstract region in relation to which an entity x is located in the 'between' region of y and z, cf. Wunderlich (1991), (1993), Wunderlich and Herweg (1991) and Habel (1989).

13. Cf. Olsen (2001) for more discussion of this point.

References

Baker, Mark (1988). *Incorporation: A Theory of Grammatical Functional Changing*. Chicago: University of Chicago Press.

Bierwisch, Manfred (1983). "Semantische und konzeptuelle Repräsentation lexikalischer Einheiten". In R. Růžička & W. Motsch (Eds.), *Untersuchungen zur Semantik* (pp. 61–100). Berlin: Akademie Verlag.

Bierwisch, Manfred (1988). "The Grammar of Local Prepositions". In M. Bierwisch, W. Motsch, & I. Zimmermann (Eds.), *Syntax, Semantik, Lexikon* (pp. 1–65). Berlin: Akademie.

Bierwisch, Manfred & Ewald Lang (Eds.). (1989). *Dimensional Adjectives, Grammatical Structure and Conceptual Interpretation*. Berlin: Springer.

Boase-Beier, Jean & Jindrich Toman (1987). "On Theta-Role Assignment in German Compounds". In B. Asbach-Schnitker & J. Roggenhofer (Eds.), *Neuere Forschungen zur Wortbildung und Historiographie der Linguistik* (pp. 41–57). Tübingen: Narr.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Clark, Herbert & Eve Clark (1977). *Psychology and Language: An Introduction to Psycholinguistics*. New York: Harcourt Brace Jovanovich.

DiSciullo, Anna M. & Edwin Williams (1987). *On the Definition of Word*. Cambridge: MIT Press.

Downing, Pamela (1977). "On the Creation and Use of English Compound Nouns". *Language, 53*, 810–842.

Dowty, David (1979). *Word Meaning and Montague Grammar*. Dordrecht: Reidel.

Fanselow, Gisbert (1981). *Zur Syntax und Semantik der Nominalkomposition*. Tübingen: Niemeyer.

Fanselow, Gisbert (1985). "What is a Possible Complex Word?". In J. Toman (Ed.), *Studies in German Grammar* (pp. 289–318). Dordrecht: Foris.

Günther, Hartmut (1981). "N+N: Untersuchungen zur Produktivität eines deutschen Wortbildungstyps". In L. Lipka & H. Günther (Eds.), *Wortbildung* (pp. 258–280). Darmstadt: Wissenschaftliche Buchgesellschaft.

Hale, Kenneth & Samuel J. Keyser (1993). "On Argument Structure and the Lexical Expression of syntactic Relations". In K. Hale & S. J. Keyser (Eds.), *The View from Building 20* (pp. 53–109). Cambridge, MA.

Halle, Morris & Alec Marantz (1993). "Distributed Morphology and the Pieces of Inflection". In K. Hale & S. J. Keyser (Eds.), *The View from Building 20* (pp. 111–176). Cambridge, MA.

Härtl, Holden (2001). *CAUSE and CHANGE: Thematische Relationen und Ereignisstrukturen in Konzeptualisierung und Grammatikalisierung*. Berlin: Akademie Verlag.

Hoeksema, Jack (1987). "The Semantics of Non-Boolean "and"". *Journal of Semantics, 6*, 19–40.

Jackendoff, Ray (1991). "Parts and Boundaries". *Cognition, 41*, 9–45.

Koopman, Hilda (1995). "On Verbs that Fail to Undergo V-Second". *Linguistic Inquiry, 26*, 137–163.

Lang, Ewald (1991). "Koordinierende Konjunktionen". In A. von Stechow & D. Wunderlich (Eds.), *Semantik* (pp. 597–623). Berlin: de Gruyter.

Lieber, Rochelle (1992). *Deconstructing Morphology*. Chicago: Chicago University Press.

Maienborn, Claudia (1996). *Situation und Lokation. Die Bedeutung lokaler Adjunkte von Verbalprojektionen*. Tübingen: Stauffenburg.

Meyer-Klabunde, Ralf (1994). "Konstruktion von Komposita-Repräsentationen in einem modifizierten DRT-Ansatz". In M. Schwarz (Ed.), *Kognitive Semantik* (pp. 61–79). Tübingen: Narr.

Olsen, Susan (2000a). "Compounding and Stress: A closer look at the boundary between morphology and syntax". *Linguistische Berichte, 181*, 55–69.

Olsen, Susan (2000b). "Composition. Article 87". In G. Booij, Chr. Lehmann, & J. Mugdan (Eds.), *Morphology. A Handbook of Inflection and Word Formation* (pp. 897–916). Berlin: Walter de Gruyter.

Olsen, Susan (2001). "Copulative Compounds: A Closer Look at the Distinction between Morphology and Syntax". In G. Booij & J. v. Marle (Eds.), *Yearbook of Morphology*. Dordrecht: Foris.

Partee, Barbara, Alice ter Meulen, & Robert Wall (1990). *Mathematical Methods in Linguistics*. Dordrecht: Kluwer.

Quirk, Randolph et al. (1985). *A Comprehensive Grammar of the English Language*. London: Longmann.

Selkirk, Elisabeth (1982). *The Syntax of Words*. Cambridge, MA: MIT Press.

Sproat, Richard (1985). *On Deriving the Lexicon*. Ph.D. Dissertation, MIT.

Stiebels, Barbara (1996). *Lexikalische Argumente und Adjunkte*. Berlin: Akademie Verlag.

Toman, Jindrich (1987). *Wortsyntax*. Tübingen: Niemeyer.

Whitney, William D. (1962). *Sanskrit Grammar*. Delhi: Motilal Banarsidass Publishers.

Wunderlich, Dieter (1991). "How do prepositional phrases fit into compositional syntax and semantics?" *Linguistics, 29*, 591–621.

Wunderlich, Dieter (1993). "On German *um*: semantic and conceptual aspects". *Linguistics, 31*, 111–133.

Wunderlich, Dieter (1997). "Cause and the Structure of Verbs". *Linguistic Inquiry, 28*, 27–68.

Wunderlich, Dieter & Michael Herweg (1991). "Lokale und Direktionale". In A. von Stechow & D. Wunderlich (Eds.), *Handbuch der Semantik* (pp. 758–785). Berlin: de Gruyter.

Appendix

The following constructions constitute the corpus that served as the empirical basis of this study. Cf. Olsen (2001) for another body of data that complements this corpus in interesting ways.

Unembedded:

(i) BUSINESS
tax assessor-collector, auditor-investigator, limited partner-investors, banker-publisher, banker-businessman, banker-diplomats, managing director-chief financial officer, financier-diplomat, broker-analyst, broker-dealer-investment banker-adviser-owner, programmer-manager, engineer-manager, dealer-manager, manager-bookkeeper, player-manager, administrator-manager-slavedriver, owner-manager, partner-lobbyist, director-officers, director-vice president, officer-boss, owner-chef, company founder-president, founder-president, owner-president, farmer-statesman, farmer-senator, farmer-rancher, farmer-borrowers, farmer-lawmaker, lawyer-rancher, lawyer-agent, lawyer-musicians, lawyer-negotiator, lawyer-novelist, author-lawyer, lawyer-environmentalist, lawyer-detective, lawyer-lobbyist, lawyer-pilot, (her) lawyer-lover, housekeeper-personal assistant, housekeeper-nanny, ranger-naturalist, park ranger-naturalist, worker-beneficiary, manufacturer-shipper, dairy buyer-merchandiser, oil refiner-distributor, motel owner-developers, owner-inventor, grower-members, grower-owners, grower-shipper (of carnations), sponsor-members

(ii) EDUCATION
teacher-entrepreneurs, teacher-researchers, (the school and its) owner-teacher, teacher-interpreter, teacher-coach, teacher-astronaut, teacher-principal, scholar-educator, scholar-priest, scholar-deputy, scholar-athletes, beggar-students, professor-consultant, Marxist philosopher-economist, philosopher-mechanic

(iii) ENTERTAINMENT
editor-director, publisher-producer, producer-editor, screenwriter-director, composer-politician, creator-producer , owner-producer, filmmaker-playwright, playwright-director, artist-writer-film creator, author-film director, publisher-executive director, listener-viewer-reader, singer-actress, pop singer-restaurateur, movie star-singer, performer-songwriter, singer-composer, pop singer-restaurateur, performer-songwriter, singer-composer, bandleader-arranger, composer-pianist-singer, entertainer-producer, soap star-pop singer, fiddler-guitarist, dancer-aerialist, conductor-witchdoctor, composer-vocalist, composer/businessman, actor-vaudevillean, restaura-

teur-entertainer, dancer-defectors, model/actress, movie star-politician, entertainer-businessman, entertainer-businesswoman, listener-victims

(iv)   WRITING

author-critic, author-detective, author-reporter, author-lecturer, writer-publicist, narrator-protagonist, opposition leader-playwright, reporter-narrator, philosopher-novelist, author-philosopher, editor-interpreter, editor-publisher, author-historian, author-chefs, author-cooks, author-cartoonist, author-editor, poet-bard, poet-satyrs, poet flacks, reporter-pilot, magazine researcher-reporter, interpreter-translator, street vendor-poet

(v)   ART

painter-pop artist, philosopher-painter, poseur-painter, developer-architect, geographer-cartographer, designer-builder, chief sculptor-engraver, curator-coordinator, associate director-chief curator

(vi)   COMPUTER SCIENCE

programmer-musicians, hacker-programmer, parser-generator, buyer-user, reader-users, builder-user, user-programmer, user-developers, supervisor-users, customer-user

(vii)   MILITARY

payload officer-flight controller, officer-explorer, instructor-navigator, firefighter-engineer, crusader-fighter, bombardier-navigator, soldier-citizens, warrior-priestess, warrior-priest

(viii) OTHER

chiropractor-veterinarian, jeweller-watchmaker, night keeper-watchman, astronomer-physicist, bouncer-doorman, player-coach, firefighter-paramedic, barber-surgeon, multimillionaire novelist, plumber-inmate, owner-cook, preacher-patron, traitor-spy, dictator-president, mayor-barber, count/chicken farmer, arms dealer-wife beater, owner-pilot, killer-rapist, murder-er-rapist, executor-murderer

(ix)   KINSHIP

(his) mentor-father, engineer-father, filmmaker father, college professor mom, (her) surgeon-linebacker-artist husband, gardener-husband, (the artist's) business manager-wife, lawyer-brother, trader-friend, dancer-girlfriend, (her) painter-lover, lawyer-lover, (one of Bush's professional-) sports hero-buddies

(x)   THINGS

sleeper-sofa, kneeler-sitters, clipper-schooner, camper-trailer, washer-dryer, copier-duplicator, video coder-decoders, assembler-disassemblers, refrigerator-freezers, bird shelter-feeder, combination telephone-microcomputer-facsimile-answering machine-alarm clock, theater-museum, dinner-auction, murder-robbery, (find the right) push-pull

Embedded:

(xi) BETWEEN

father-daughter relationship, father-son relationship, lawyer-client relationship, officer-clerk relationships, programmer-musician connection, lawyer-client talks, producer-consumer talks, teacher-pupil ratio, worker-employer disputes, worker-employer conflict, supervisor-employee interaction, computer-human interaction, mother-infant bonding, car-pedestrian accident, teacher-student sexual contact, investor-broker case, word-object associations, conservative-liberal split

(xii) COLLECTION

hotel-apartment complex, mother-daughter duo, city manager-city council system, mayor-commissioner form, water-alcohol mixtures, owner-employee company, dealer-broker firms, a worker-peasant state, teacher-parent councils, parent-teacher-principal, school management committee, producer-user consortium, copier-scanner-facsimile combinations, dinner-theater circuit, broker-dealer unit, Bush-Cheney electors

(xiii) OTHER

liver-intestine transplant, garlic-peanut butter-chocolate candies, shower-locker room area, sea-air-space museum, mentor-teacher program, broker-deal funds, takeover-buyout mania, copier-fax machine, scatter-gather capability, hunter-gatherer-trader life-style, designer-generator tool, teacher-parent dinners, sitcom/standup show, retailer-wholesaler-manufacturer profit expectations, functor-argument notation, Clinton-Gore campaign-finance squalor, order-build-ship-bill cycle, album-tour rat race

Aspect, infinitival complements, and evidentials*

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1. Introduction

This paper starts with an examination of Giorgi and Pianesi's (1997) evidence for positing certain differences between English and German infinitives. They argue that bare (eventive) infinitives without *-e(n)*, as in English, are perfective, but that infinitives with *-e(n)*, as in German and Dutch, are not. Two pieces of evidence they provide are: (a) Perception verb (PV) complements in English are perfective, but they are not in Dutch and German, and (b) the simple present in English cannot be used to express present tense. I show that there are several problems with these parts of Giorgi and Pianesi's analysis. First, the infinitival ending in English was lost several centuries before the infinitive became perfective, as defined in Giorgi and Pianesi, and before the simple present ceased to be used. Second, eventive (bare) infinitives are not always interpreted as perfective in Modern English. Rather than focus on the infinitival ending, I will argue that the position of the PV is responsible to account for (a), and that there are three kinds of PV, a (rare) activity verb and two stative ones, an evidential and a regular verb. Such an analysis accounts for a number of typological and historical phenomena, as well as for the difference in constituent structure between bare infinitives and *-ing* constructions (as discussed in Akmajian 1977), and restrictions in complementation to PVs. The structure I suggest also reflects the fact that in many languages evidentials and perfectives are related, in accordance with Abraham (1998, 1999). To account for (b), I assume that ASP is introduced for imperfectives in the 15th century and, adapting Cowper (1999), that the basic setting of the parameter ASP is switched in English in the 18th century.

The main differences between Modern English on the one hand and similar Germanic languages on the other now emerge as (a) *saw* is more grammaticalized in the former than in the latter,[1] (b) the contents of ASP(ect) in Modern English are either checked by the perfective evidential or by the form in *-ing*, whereas in Germanic, ASP is ambiguous, and (c) as argued by traditional grammarians, the real changes are caused by the availability of *-ing*, and perhaps by the loss of aspectual markers.

The outline is as follows. In Section 1, I sketch Giorgi and Pianesi's analysis of bare infinitives and very briefly describe the problems with this analysis. In Section 2, the problems are elaborated to show that complements to PVs continue to have non-perfective bare infinitives after the ending disappears, but that the use of the simple present continues long after. In Section 3, I provide an overview of the literature on ASP(ect) and account for one of the two predictions that G&P make. In Section 4, I argue that there are two kinds of *see*, an evidential in ASP(ect) and a full verb, each with their own structure, accounting for the second set. Section 5 presents my conclusions.

2.   Are bare infinitives perfectives in English?

Giorgi and Pianesi (hence, G&P, 1997: 163ff.) argue that English bare (eventive) infinitives carry a perfective feature. The reason infinitives need this feature is that their morphology does not differentiate them from nouns. G&P derive two empirical differences between a language such as English, without an infinitival ending, and languages such as German and Dutch, with an infinitival ending. First, they (1997: 163ff.) argue that the difference between (1) and (2) is due to it:

(1)   I saw/*see him cross the street.

(2)   *Ik zag/zie hem de straat oversteken.*
       I saw/see him the street cross
       'I saw/see him cross(ing) the street'.

It is well-known (e.g. Quirk et al. 1985: 1206) that Modern English bare infinitives differ from those in other Germanic languages in that the event referred to by the infinitive in (1) must be completed. In Dutch, on the other hand, the infinitive in (2) can refer to the action in progress (or to the completed action). If, as G&P argue, English eventive infinitives are [+pf], (1) cannot have an imperfective meaning. Instead, to indicate an incomplete action in English, the progressive is used, as in (3) and (4), not the bare infinitive, as in (1):

(3)   I see him crossing the street.

(4)   I saw her reading the book for hours.

Miller (2002: 256) provides a good characterization of other aspectual differences between (1) and (2), the former being a "genericized but telic event" whereas the latter is a "non-completive, particularized event [] in progress that can have duration". Languages as diverse as Russian and Lele, a Chadic language, make similar morphological distinctions to indicate perfective, as in (5) and (7) respectively, or non-perfective complements, as in (6) and (8) (Buzarovska 2000 for Russian; Frajzyngier 1996: 278–279 for Lele):

(5)   *Ja videla kak Bob pereshel ulicu*
      I   saw   if   Bob cross-PF street
      'I saw Bob cross the street'.

(6)   *Ja videla kak Bob perehodil   ulicu*
      I   saw   if   Bob cross-IMPF street
      'I saw Bob crossing the street'.

(7)   *ng-gòl-ì   wàl   tù*
      1s-see-3M slaughter goat
      'I saw him slaughter a goat'.

(8)   *ng-gòl-í   go   jè   wàl-dí   kúlbà*
      1s-see-3M COMP PROGR slaughter cow
      'I saw him slaughter a cow'.

I will not explore Russian or Lele further; the data are given to show that the English situation is not unusual.

There are other indications that the infinitive in (1) is really perfective: (9) is ungrammatical since the 'for hours' forces a durative reading, incompatible with the perfective, unlike its exact Dutch counterpart in (10):

(9)   *I saw him read books for hours.

(10)   *Ik zag hem urenlang boeken lezen*
       I saw him hourslong books read.

As in other constructions, a perfective is typically triggered with definite objects, and imperfective with indefinite ones. Therefore, (11) is worse in English than (12):

(11)   ?I saw him read books.

(12)   I saw him read the book.

Straightforward counterexamples, not discussed in G&P, are (13) to (17). *Swim* in (13) should be perfective and isn't. So, perfectivity is not connected to the infinitive (see also Parsons 1990):

(13)   Seeing her swim is exciting.

(14)   I made them watch Michael swim (for hours).

(15)   Mary watched the boatman leave the house.
                              (Gaskell, *Mary Barton* 31 from the OED)

(16)   Martin took it, feeling himself surrender.   (from Visser, IIIb: 2251)

(17)   We'd be hearing him holler for mercy.   (from Scheffer 1975: 68)

In (13) to (17), the aspectual restrictions do not apply, since there is no tense to connect to (see e.g. Julien 2001: 145). The bare infinitival complement need not be perfective, not explained in G&P's account. To jump ahead, I will agree with G&P that in (1), the complement is perfective, but for a reason different from theirs, namely depending on the PV instead of the complement.

The second piece of evidence that G&P use is that eventives cannot occur in the simple present tense, as (18) shows, since they are perfectives and perfectives are bounded and the present is not. Instead, the progressive as in (19) is used:

(18)   *I eat right now.

(19)   I am eating right now.

The presence of [+pf] is compatible with the progressive which is bounded (G&P, p. 169). Stative verbs such as *know* and *see* are not associated with [+pf] since, like habituals, they are associated with a generic operator.

Thus, according to G&P, there are two reasons for assuming English bare infinitives are perfective: the interpretation of (1) and the ungrammaticality of (18). If this account were correct, languages without the infinitival ending would always be expected to be like Modern English in these two respects, and this is not true as I show in the next section. In addition, English bare (eventive) infinitives would always be expected to be perfective. Sentences (13) to (17) above show this is not true either.

3.   Bare infinitives: Infinitival endings and perfectivity

In 3.1, I will argue that interpretations as in (1) are not dependent on the infinitival endings, since the change to the Modern English interpretation of (1)

does not coincide with the loss of the ending, and in 3.2, I show that neither does the ungrammaticality of (18).

3.1 Perception verb complements (hence PVCs)

In Old and Middle English (hence OE and ME respectively), the infinitive has an ending, as in (20), but a present participle also occurs ending in *-ande/-inde/-ende*, as in (21) and (22), and later in *-ing*:

(20) *Ic seah turf tredan*
I saw earth tread
'I saw earth being walked on'.   (Riddle 14, from Callaway 1913:35)

(21) *se hælend ... seah hia hremende 7 uoepende*
'The savior saw her weeping and weeping'.

(Lindisfarne Gospel, *John* 11, 33)

(22) *He seye ... a grom cominde*
'he sees a man coming'.   (*Guy of Warwick* 5799, from Visser, p. 2344)

Many people argue that the present participle is not "a native idiom" but appears in texts that are translated from Latin, e.g. (21) is an interlinear gloss. Sentences such as these would have the same analysis as (3) in Modern English with *see* having a sentential complement. At issue is not their occurrence, but the occurrence of infinitives with perfective meaning at the time that the ending is disappearing. Some people have argued that the difference in aspect between constructions such as (1) and (3) was already present in Late OE (see Zeitlin 1908:72 for a nice list of examples of both). If that is the case, it would be problematic for G&P as well. Here I will only look at ME.

The ME bare infinitive constructions from Chaucer in (23) to (26) have imperfective interpretations, as in (2) above. For instance, the adverb *to and fro* in (23) indicates duration, and in Modern English, the *-ing* form would be used:

(23) *The fairnesse of that lady that I see | Yond in the gardyn romen to and fro | Is cause of ...*
'The beauty of that lady that I see roaming in that garden is the cause of ...'
(Chaucer, *Knight's Tale* 40.1098-9, from Kerkhof 1966:55)

(24) *The deeth he feeleth thurgh his herte smyte*
'The death he feels cutting through his heart'.

(Chaucer, *Knight's Tale* 42.1220)

(25) *I sawgh hyr daunce so comlily | Carole and synge so swetely | Laughe and pleye so womanly*

'I saw her dancing so becomingly, dancing and singing so sweetly, laughing and playing so womanly'.   (Chaucer, *Book of the Duchess* 340.848-50)

(26)   *But ... in hande I saw hym holde | Two firy dartes ...*
'But in his hand I saw him holding two fiery arrows'.
(Chaucer, *Legend of Good Women* 594.166-7)

In Chaucer, i.e. at the end of the fourteenth century, both *-e* and *-en* endings occur, but it is unclear if they are pronounced. It is at least sometimes pronounced in Chaucer, i.e. *smyte* in (24) rhymes with *Arcite*. Southworth (1947:925) estimates that in Chaucer the final infinitival *-e* is not pronounced in 82% of the cases. Minkova (1991), citing a number of other scholars, argues that the ending is disappearing in the North from 1100 on but that "[b]y 1400 final unstressed *-e* had been abandoned in all parts of the country" (p. 30). Görlach (1990:47) says that from 1400 onwards, the *-e* spelling is "arbitrary and optional" (see also Moore & Marckwardt 1951). This fits with the rise of I(inflection) in which the ending is lost and the irrealis of the infinitive is expressed by *to* in I (cf. van Gelderen 1993, 1997a) (cf. also Fischer 1992, 1995 who argues for ME that *to* expresses tense independence).

There is also an *-ynge* after PVs in Chaucer, as in (27):

(27)   *And saw his barge saylynge in the se*
'And saw his barge sailing in the sea'.
(Chaucer, *Legend of Good Women* 624.2196)

Miller (2002:265ff.), based on arguments from Fischer (1995), argues that in Chaucer the aspectual difference is as in Modern English. Even though (27) occurs, (23) to (26) show the situation is not as in Modern English.

In the fifteenth century *Paston Letters* (hence, PL), the infinitival ending *-en* is fairly rare: apart from *ben* 'to be', there are perhaps 20 in a large corpus. In the PL, neither bare infinitive nor *-ing* is popular, probably because letters do not encourage present tense. In More's English (Visser 1946–1952), from the beginning of the 16th century, i.e. a century or so after the loss of the infinitival ending, infinitives need not have a perfective meaning, as (28) shows. (28) emphasizes the action through the adverb and Modern English would use *running*. This text has many *-ing* forms too (see Visser 1952:810):

(28)   *The fox ... saw him run so faste*
'The fox saw him running so fast'.
(*Richard* 71 C 1, from Visser 1952:761–762)

Thus, even though the infinitive has no ending, it can be used as a non-perfective.

Mulcaster, an Early Modern English grammarian, in his 1582 *Elementarie*, divides final -e into "soundeth or … silent" (p. 111). The first category includes *me, see, we, agree, yee*, and *e* in Latin words, but the section is very short; the silent *-e* section is much longer (and talks about nouns as well as verbs). Silent *-e* is said to have an effect on the length of the vowel preceding it, as in *made, cure*, and is used in many other situations, e.g. in *cause, excuse, deceiue, loue, moue*. Thus, Mulcaster's description shows that Elizabethan English infinitival endings are not pronounced differently from Modern English. Franz (1909: 21) says the infinitival *-e* is used "ziemlich prinziplos" in Shakespeare's time, but *-en* is never used. This lack of *-e(n)*, however, does not seem to force an increase in the use of *-ing*, since very few complements as in (29) and (30) occur. There are two *-ing* complements after *see/saw*, namely (29) and (30), but many bare infinitives, as in (31) to (33), and many past participles:

(29) who you saw sitting by me on the Turph.   (*As You Like It* III, IV, 52)

(30) may you see it comming.   (*Macbeth* V, v, 37)

(31) to see thee weare thy heart in a scarfe.   (*As You Like It* V, ii, 23)

(32) when she sees me worke.   (*Tempest* III, i, 12)

(33) When shall you see me write a thing in rime.
                                                       (*Love's Labor's Lost* IV, iii, 181)

Adding the auditory PVs, of the 852 instances of *heare* in the First Folio edition of 1623, only five occur with *-ing* complements, two in *Hamlet*, as in (34) and (35), two in *King Lear*, and one in *First Henry IV*. Four of these have the same verb in the complement:

(34) I heare him comming.   (*Hamlet* III, i, 55)

(35) Withdraw, I heare him coming.   (*Hamlet* III, iv, 7)

Instances of bare infinitival complements after *hear*, as in (36) and (37), are very frequent. After *heard*, the complements are bare infinitives, as in (38) and (39), participles, as in (40), and *to*-infinitives, as in (41):

(36) and another Storme brewing, I heare it sing ith' winde. (*Tempest* II, ii, 20)

(37) harke, do you not heare the people crie Troylus?
                                                       (*Troilus & Cressida* I, ii, 244)

(38) I heard the Owle schreame, and the Crickets cry.   (*Macbeth* II, ii, 16)

(39)   Me thought I heard a voyce cry, Sleep no more.   (*Macbeth* II, ii, 35)

(40)   You heare all these matters deni'd.   (*Merry Wives* I, i, 193)

(41)   Who heard me to denie it?   (*Comedy of Errors* V, i, 26)

Thus, as late as Shakespeare, the infinitive continues to be used as a non-perfective to a PV and after a present tense form of the verb *see* (and *hear*). It is also more frequent than the *-ing* complement, unlike the Modern English data by e.g. van Ek (1966: 150–153) that show that (3) is twice as frequent as (1).

At what point does the Modern English situation arise? Is it a relatively sudden change or does it peter out? To answer that question, I have looked at later texts, an early 18th century and a 19th century one. It is sometimes difficult to interpret whether the complement is perfective or not, but it is not difficult to see if the present tense is used, which is no longer grammatical (see (1b) above). The early 18th century text (from 1710), *A Treatise Concerning the Principles of Human Knowledge* by George Berkeley contains quite a number of instances such as (42) and (43):

(42)   But, when we see things go on in the ordinary course they do not excite in us any reflexion.   (Principles, 57)

(43)   And I would fain see any one explain any the meanest phenomenon in nature by it.   (Principles, 72)

The picture is very different in the 19th century novel, *Emma* by Jane Austen. There is only one bare infinitival complement after *see*, as in (44), but here *see* is infinitival, not present tense, and is like (13). There are many infinitives as in (1) after *saw*, as is the case in Modern English, as in (45). The *-ing* complements all forms of *see*, as shown in (46) and (47). There is, however, still an infinitive with *to*, as in (48):

(44)   She was delighted to see her father look comfortable.

          (Emma, Vol. I, Chap. 3)

(45)   saw her go away in the evening attended by ...   (Emma, Vol. I, Chap. 1)

(46)   saw Frank Churchill looking intently across the room at Miss Fairfax.

          (Emma, Vol. II, Chap. 8)

(47)   I cannot see you acting wrong   (Emma, Vol. III, Chap. 7)

(48)   and it was not long before he saw it to be Dixon. (Emma, Vol. III, Chap. 6)

In conclusion to 3.1, the loss of *-en* cannot be shown to coincide with the bare infinitive becoming perfective. Rather, the infinitive remains ambiguous even

after it has lost its ending until gradually *-ing* is reanalyzed as imperfective marker.

3.2 The use of the simple present

There are two other problems for G&P's account, related to the use of the simple present: (a) the progressive is available in OE, i.e. is not introduced with the loss of *-en-*, and there is even no sudden increase of constructions such as (19), and (b) the use of the simple past remains frequent after the loss of the infinitival ending. This is also the situation in a contemporary language, namely Modern Afrikaans, a language without infinitival endings (e.g. *te drink*, *te se*, *te kom*) in which eventives can be present tense (*Nou dans die poppe*, Ponelis 1991:187; Paul Roberge p.c.).

The ultimate reason for the increase of the progressive is not known. Scheffer (1975:110ff.) says that it occurs especially in the 19th and 20th centuries, but it does not coincide with the demise of the infinitival ending. Mossé (1938, II, 2ff.), based on Streitberg, attributes the popularity of (19) to the loss of the aspectual system since the 13th century. In OE and Germanic, the simple verb is durative, whereas verbs with prefixes (he calls them 'preverbes') are not. I will argue later on that this is a major (parametric) shift between a system with unmarked perfective and one with unmarked imperfective. One of the problems for any theory might be that already in OE the *-ing/ende* form is alive and well, as (49) shows, especially with verbs of dwelling and movement (see also Pessels 1896; Raith 1951:iii, as opposed to Jespersen's 1931:168, claims that the ME *-ing* is not a continuation of the OE one), and as (21) and (22) above show for PVCs. It continues from then on, as (50) shows:

(49)   *ac se æglæca eht**ende** wæs*
       but the monster pursuing was
       'but the monster was chasing'.   (*Beowulf* 159)

(50)   *We han ben waity**nge** al this fourtenyght*
       'We have been waiting these two weeks'.   (Chaucer, *Knight's Tale* 38.929)

The additional problem for G&P is that long after the *-en* disappears, the simple present persists. I first provide some ME examples. The ME data in (51) and (52) are similar to those in other Germanic languages, e.g. Swedish, Afrikaans, German, Dutch in (53), and OE in (54), since eventive simple present occurs. Chaucer, as shown above, may still have an infinitival ending and hence G&P cannot be proved or disproved much before 1400:

(51) *What do ye, maister Nicholay?*
      What do you, master Nicholay
      'What are you doing, master Nicholay'.   (Chaucer, *Miller's Tale* 71.3437)

(52) *What say you, Scarlet and John?*
      'What are you saying, Scarlet and John'.
                                          (Shakespeare, *Merry Wives* I, i, 155)

(53) *What doe je? Ik eet een appel.*
      'What are you doing? I am eating an apple'.[2]

(54) *nu ic arisu cwið drihten*
      Now I rise said lord
      'Now I rise up said the lord'.   (*Vespasian Psalter* 11.6, Visser 663)

In the 15th century *Paston Letters*, i.e. after the infinitival ending is definitely lost, the special progressive is relatively rare (around 20 perhaps in a corpus of over 250,000 words):

(55) *þer ys comyng, ..., more than a thowsand*
      there is coming ... more than a thousand
      'More than a thousand are coming'.   (*Paston Letters* #187, anno 1465)

(56) *where the seid felechep is abydung*
      'Where the above-mentioned fellowship abides'.
                                          (*Paston Letters* #40, anno 1452)

(57) *syche mony that he is owyng*
      'such money that he owes'.   (*Paston Letters* #336, anno 1469)

These occur with the same verbs as in OE and most of those would not get *-ing* in Modern English, e.g. (56), perhaps indicating that it is not the same construction, in accordance with Jespersen (1931) as mentioned above (see also Note 4). That would make the connection between loss of *-en* and introduction of *-ing* even more tentative.

     The present tense is typically expressed as in (58) to (60), with the latter possibly being fossilized:

(58) *I send you*
      'I am sending you'.   (*Paston Letters* #3, anno 1425)

(59) *I make þis day a new apelle*
      'I am making a new appeal today'.   (*Paston Letters* #4, anno 1426)

(60) *I recomaunde me to you*
      'I commend myself to you'...
                        (*Paston Letters* #3, frequent formula in letters, anno 1425)

By the time of More, i.e. the early part of the 16th century, the progressive is still "employed rather sparingly" (Visser 1946: 248), even though the infinitive has lost its ending. In Shakespeare, *-ing* is used on occasion, e.g. in (61), cf. also Franz (1909: 514). Visser (p. 662) says, about both More and Shakespeare that "at the time the choice between the two possibilities did not yet depend on any fixed principle". The simple present is used frequently, as in (62) to (64), all from the *Merry Wives of Windsor:*

(61) Now she's going to my wife.   (Shakespeare, *Merry Wives* III, ii, 36)

(62) *Whether go you. ... To see your wife*
      'Where are you going'.   (Shakespeare, *Merry Wives* II, ii, 10)

(63) But what saies shee to mee?   (Shakespeare, *Merry Wives* II, ii, 75)

(64) What say you?   (Shakespeare, *Merry Wives* II, ii, 155)

Again, the question can be asked at what time the loss of (62) to (64) took place. I have looked at some 17th and 18th century (pedagogical) grammars. Only the ones from the middle of the 18th century include the *ing* as a regular present. Wharton (1654) does not allude to a special present tense form ending in *ing*, except in one sentence: "A Participle of the Present tens signifieth the time present, and endeth in *ing*; as *loving, teaching...*" (p. 54). Miege (1688) gives as the present tense *I love* or *I do love*. He was born in France and comments (p. 67) "Lastly, 'tis to be observed, that the English has a peculiar Way of using the Verb *to be*, with a Participle of the Present Tense. As, *I am writing* for *I write...*". Lane (1700) comments: "[t]he Auxiliaries of the Present Tense, are, *do, dost, ...; am, art, ...*; as *I do call ...*; *I am calling*" (p. 44). Duncan (1731) and Fisher (1750) clearly imply that the *ing* is a present; Greenwood (1711) seems to suggest the use is optional.

G&P account for the differences between Dutch (53) and Modern English (18) by assigning [+pf] to the English eventive infinitive. This explanation encounters empirical problems. Even as late as Shakespeare's time, i.e. around 1600, long after the disappearance of *-e(n)*, (62) to (64) are grammatical. In the next section, I therefore suggest that this problem is independent of the ending, but depends on what is in ASP. One might ask what the function of the infinitival ending is if not to indicate perfectivity. Hoekstra and Hyams (1998) argue that the root infinitive in child language Dutch and German has a modal interpretation (also responsible for an aspectual constraint).[3] This modal meaning occurs even in adult Dutch, as in (65):

(65)   *Niet op het gras fietsen als   het nat is*
       not on the grass bicycle when it   wet is
       'Don't bike on the lawn if it is wet'.

Infinitives indicate irrealis cross-linguistically. Certainly, the modern English *to* infinitive indicates irrealis in many cases, e.g. in (66) (see van Gelderen 1993: Chap. 5), and English child language shows sensitivity to modality/irrealis at the time *to* appears (see Hyams 2001: 225):

(66)   I want to go.

I will not go into this further here, the main point being that the infinitive is not perfective.

4.   The reanalysis of *-ing* as ASP

What is the reason for the changes that bring about the Modern English ban on eventive simple presents in (18) and the interpretations of PVCs in (1) and (3), if not the infinitival ending? In this section, I argue that it is the reanalysis of *-ing* as checker of the imperfective feature in ASP, starting in the 15th century, and a parametric change of the unmarked aspect in the 18th century that bring about the set of changes responsible for the present tense marking, as well as for the interpretation of PVs. In Section 4, I argue that PVCs involve ASP, and that PVs can be seen as more or less grammaticalized. Thus, it isn't only the complement and ASP that change, PVs do too. First, in 4.1, I look at some recent theories on ASP, and then, in 4.2, I propose a possible historical scenario.

4.1 ASP

Since the splitting of the IP into AGRP and TP in the late 1980s, ASP has become a frequently used functional category, e.g. Tenny (1987), Speas (1990), van Gelderen (1993), Travis (2000), to mention but a few. Other names are used as well, sometimes indicating a similar entity, VoiceP, and Tr(ansitive)P in Jelinek (1997). Some recent accounts, for instance, Ramchand (1997) and Cowper (1999) have provided analyses using ASP for present tense constructions, and Felser (1999) has used ASP for PVCs. In this section, I briefly discuss the latter two accounts.

     Cowper (1999: 218) argues that "languages choose either moment (perfective) or interval (imperfective) as the unmarked representation of events

... In English the unmarked value of *e* is moment, while in French it is interval. While English has inflectional morphology making sentences imperfective, French has inflectional morphology making sentences perfective". Cowper also needs a (universal) principle excluding two temporal points to be simultaneous, and a discourse anchor which is a point/moment. Because in French the simple present as in (67) denotes an interval, the constraint is not violated (the event takes place as the same time as the moment of discourse), whereas in the English translation in (68), it is because the simple present is a moment and so is the discourse:

(67) *Elle écrit une lettre*

(68) *She writes a letter

With special morphology, a marked form is possible, i.e. *-ing* in English indicates that *e* is interval. Cowper's account, unlike G&P's, does not give an independent reason why a language would have one choice unmarked over the other. For the purposes of this paper, however, I will adapt Cowper's theory. Cowper excludes stative verbs from having an ASP and *e* (e.g. 1999: 221), while others, e.g. Parsons (1990), have argued statives do include *e*. I assume statives include an ASP that is perfective, or in Comrie's terms, unanalyzable. A minor change from Cowper is that I use perfective for moment and imperfective for interval.
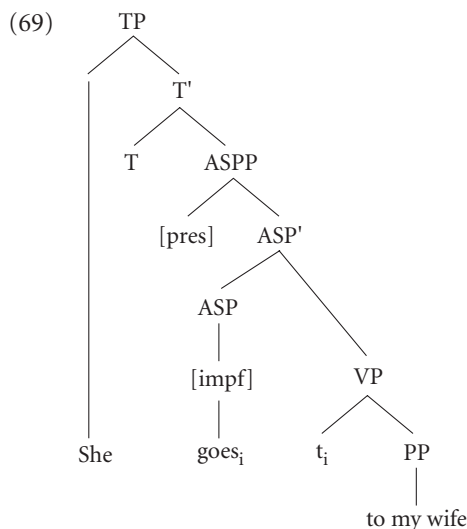
For PVCs, Felser (1999, e.g. 124) uses an ASPP. She not only includes ASP, vP, and VP, but allows a second vP Specifier position to accommodate the object. She does not include an AGRoP, since checking of the object Case is against v from the outer specifier position. I will provide a structure for PVCs in Section 4 which, like Felser, includes an ASP to account for PVCs. Felser, however, focusses on experiencer PVs. I will give different analyses for experiencer and activity perception verbs, and will argue that only the latter have a structure similar to Felser's.

4.2 Changes in ASP

Turning to the historical changes involving ASP, it has often been assumed that OE and Old High German, etc. display more aspect than their modern offspring. Streitberg (1891) believes that the German prefixes are perfectivizing. In Gothic, the prefix is on occasion even an independent morpheme (see Lenz 1886: 11). *Have* is not generally used for present perfect in OE and Traugott (1972: 91) argues it arose to replace *ge*. Brinton (1988: 202ff.) argues

that OE verbal prefixes indicate telicity, but that *ge-* has become "seriously over-extended" (p. 212) by ME. Mustanoja (1960: 446) writes that *ge-* remains productive as a perfectivizer "down to the 13th century", but that its disappearance is due to Norse influence and occurs first in the North. *For* retains its productivity "down to the end of the ME period".

If Chaucer only uses a limited palatalized version in the poetry, it is safe to say that around 1400, *ge-* is lost completely as a marker of perfective in ASP. Is there a replacement, as Traugott suggests? There is a possible one, as in (50) above from Chaucer and (61) from Shakespeare, namely -*ing*. The typical present tense representation would be as in (69), with occasionally an -*ing* as in (61) occupying ASP:

```
(69)        TP
           /  \
              T'
             /  \
            T    ASPP
               /   \
           [pres]   ASP'
                   /    \
                 ASP     \
                  |       \
               [impf]     VP
                         /  \
        She    goes_i   t_i   PP
                               |
                            to my wife
```

Many of the grammars of the time of Shakespeare write that the present tense is *I go* or *I do go*, and do not mention (61). The form with *do* indicates a continuous action, and could be in ASP. The unmarked representation of events in ASP is still imperfective, so that the verb is imperfective unless especially marked (see the discussion of Cowper 1999 above) and does not switch from imperfective to perfective until the 18th century, as shown by what the contemporary grammars write.[4] Note that the presence of a T is necessary for the ASP to connect to, as (13) to (17) above show.

Apart from -*ing* and possibly *do*, there are around and after 1400 other occupants of ASP, namely the past participle ending, infinitival *to*, (and *have*, not discussed here), each with a different interpretation. As a result, construc-

tions such as (70) and (71), where *me* and *her* are the subjects of *sayd* and *told* respectively, become frequent for a while, as do constructions such as (72) to (74), see also (41) above (taken from Visser IIIb: 2254-5):

(70) *And tolde hym al, as ye han herd me **sayd***
      'And told him all as you have heard me say'.
                          (Chaucer, *Franklin's Tale* 188.1547)

(71) *Whan Troilus hadde herd Pandare **assented** to ben his help*
      'When T had heard P agree to be of help'. (Chaucer, *Troilus* 487.1009-10)

(72) Saw his ... artes to fayle.   (Spenser, *Fairy Queen*, I, 6, 5)

(73) it was a sight of joy to see my two brave rams to fight.
                          (Ben Johnson, *Sad Shepherd* II, ii)

(74) I saw her corall lips to moue.   (Shakespeare, *Shrew* I, i, 75)

The latter is a regular construction from later ME on, especially frequent in the 16th and 17th centuries, as in (73) to (74), and with a meaning as in (3) not (1). In the early 15th century Pecock (Zickner 1900: 67), *see* is complemented by a bare infinitive only twice but by *to* four times and *forto* once. So, at the time of the changes around ASP, the *to*-infinitive expresses durativity. In other constructions, *to* is assumed to be in I(nflection). It seems to me that the meaning of (74) and that of (66) are very different, and I attribute that to *to* being in ASP in (74) and I in (66). The *to* of (66) indicates irrealis and is used throughout the history of English, even though it only starts to be situated in I around Chaucer's time. This construction also occurs with modals only if the modal is very far removed from the infinitive (Visser 1952: 590, 620; see van Gelderen 2001). The past participle expresses perfective, also situated in ASP.

   In conclusion, in OE, the prefixes on the verbs determine perfectivity, which, adapting Cowper's proposal, means ASP is perfective, and needs to be specially marked for perfectivity. As the prefixes disappear, *-ing*, and for a while *to*, as in (72) to (74), are reanalyzed as ASP with an imperfective meaning. For a certain period, the past participle, as in (70) and (71), is also perfective and there is unclarity as to the unmarked value of ASP from the 15th to the 18th century. This is due to a parametric change in the system from one specially marking perfectivity to one marking imperfectivity, or one with a basic ASP as in (75a) changing to (75b):

(75) C18 Aspect Switch:
      a.   ASP   b.   ASP
            [impf]   >   [pf]

Change (75) predicts that (18) becomes obsolete, (19) the regular present, and that (1) and (3) get the meaning they do in Modern English. It also accounts for the otherwise strange construction in (72) to (74) occurring between the end the 14th and the end of the 18th century. In the next section, I argue that PVCs do indeed involve ASPPs, and that (1) and (3) differ structurally.

5.   Perception verbs in Modern English and Dutch

There have been many analyses of PVCs (Akmajian 1977; Guasti 1993; Felser 1999; Miller 2002; to name but a few). I will not review these. My account differs in that I argue that there are different kinds of PVCs, since there are three kinds of PVs, of which one is a modal.

5.1   Three kinds of *see*

As is well-known, PVs such as *see* are typically stative (as well as achievements, see e.g. Dowty 1979:66) and are incompatible with the imperfective, as in (77), and with a durative adverb, as in (78).[5] Viberg (1983:123) uses the term experiencer-based for these. As a result, the simple present is typically used in (76) rather than the progressive in (77), but see below for an activity *see*:

(76)   I see (the) mountains.

(77)   *I am seeing (the) mountains.

(78)   *I see the mountains for two hours.

There is also an activity *see*, as in (79), but these are typically replaced by clearer activity verbs such as *watch*:
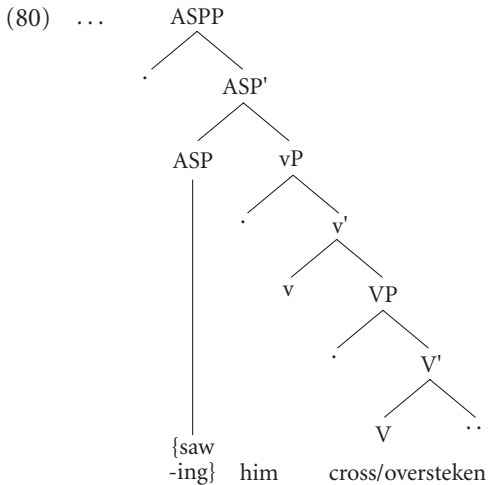
(79)   Poirot was seeing the face of a girl with red hair ...
                         (Agatha Christie, *Labours of Hercule* 55, Visser IIIb: 1982)

The activity one obeys Cowper's constraint, in that the present tense is specially marked by *-ing*. The activity PVs in English are not typically *see* but *watch, observe, look at*, and *perceive*. I'll come back to that later. I claim that *see* is ambiguous between an activity reading, as in (79), which is rare, and two kinds of stative readings, as in (1) and (3) above.

The case of stative *see* is more complex. It is not unusual for verbs of perception to grammaticalize into evidentials, and I will show that this is the case in (1), but not (3). I will refer to this process as grammaticalization, as it in-

volves the change from a lexical verb to a more auxiliary-like element. For instance, Gordon (1986:75, 84) shows that in Maricopa, a Yuman language, *see* and *hear* can be either evidential or full verbs with a sentential complement. I call it an evidential in (1), since it indicates information source rather than mood. In Dutch and other languages, there is just one kind of stative PV. The evidence provided above that (1) is different from (2) even though both involve bare infinitival complements includes: an exclusively perfective reading in (1), an incompatibility with duration adverbs in (9), but not in (10), and a marginal (11). The structure I suggest for (1), (2), and (3) is (80), where following a system as in Chomsky (1995),[6] ASP has (Interpretable) features either for perfective or imperfective. In (1), the grammaticalized *saw* checks perfective and *cross* does not move, whereas in (3), *cross* moves to check imperfective (with *him* moving to Spec ASPP presumably for Case reasons in both sentences). In Dutch (2), *oversteken* 'cross' moves to ASP to check either perfective or imperfective. So, *saw* in (1) and *-ing* in (3) are in complementary distribution:

(80) . . .
```
              ASPP
             /    \
            ·      ASP'
                  /    \
               ASP      vP
                       /   \
                      ·     v'
                           /   \
                          v     VP
                               /   \
                              ·      V'
                                    /   \
                                   V     . . .
        {saw
         -ing}   him    cross/oversteken
```
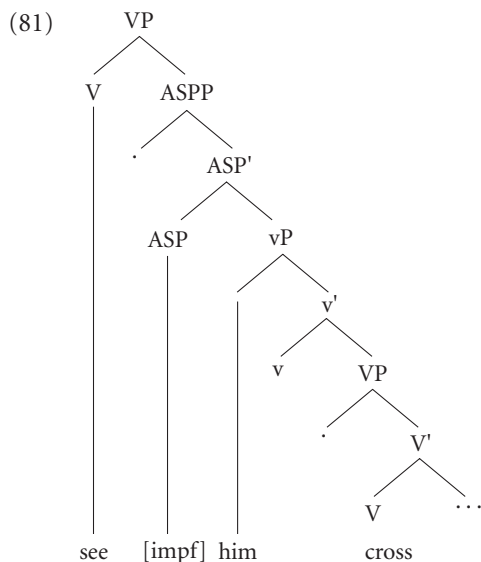
Thus, while agreeing with Felser (1999) that PVCs involve an ASPP, I argue that the PV is in ASP (or moves to it from v). In (80), I include both vP and ASPP, but as Ramchand (1997:216) argues it may be that vP is really ASPP and can hence be deleted. I won't go into that here. Since *-ing* is not available in Dutch, ASP is ambiguous. Therefore, *oversteken* 'cross' in (2) can have independent aspect which it checks in ASP.

Regarding terminology, I use perfective and imperfective, but use the latter only for the progressive, not for the habitual reading. See e.g. Parsons (1990)

for more precise formulations in terms of events: the perfective denotes a complete event with a culmination point, and the progressive an incomplete event without a culmination point.[7] Assume that in (80) ASP indicates ±pf, then Modern English has two options for ASP: either perfective *saw* or (the specially marked) imperfective *-ing*. Abraham (1998) argues that "evidentiality is ... often triggered by the perfect or perfectiveness", which is the unmarked setting for English. Comrie (1976:108–110) argues that the perfect is typical for the inferential evidential, not the direct evidence one. I see no reason to restrict it that way, and will assume that perfect can also be used for direct perception. In many languages, perception in the past/perfective is more grammaticalized than perception in the present. For instance, Turkish indicates evidentiality (direct vs. indirect perception) in the past tense (see Slobin & Aksu 1982:188), and Buzarovska (p.c.) reports that in Greek and Macedonian PVs in the past tense, i.e. as in (1), have a special complement that makes them more grammaticalized into evidentials than the present tense ones. Barnes (1984:259) shows that a verb with a visual evidential suffix is past unless specially marked.

See can also be non-evidential, and then it is a full verb higher in the tree with *cross* checking imperfective, as in (3). The tree would be as in (81), identical to (80) but with the higher VP showing:

(81)

```
                VP
          _____|_____
         V           ASPP
        see        ___|___
                  .      ASP'
                      ____|____
                    ASP        vP
                  [impf]    ____|____
                           |       v'
                          him    __|__
                                v      VP
                              cross  __|__
                                    .    V'
                                       __|__
                                      V    . . .
```

see   [impf] him   cross

Felser (1999:205ff.) argues that Dutch *aan 't*, in sentences such as (82), and German *am* are ASP projections as well. However, sentences such as (82) are marginal after PVs:[8]

(82) ?*Ik zag hem* ('*Harry Potter*') *aan 't lezen*
       I saw him Harry Potter on the reading
       'I saw him reading Harry Potter'.

It is interesting that historically many *-ing* forms in English derive from a preposition followed by a verb with *-ing* (cf. van Gelderen 1993:Chap. 8). Hence, (82) and the German counterpart with *am* in ASP would not be an unexpected development, predicted by (81).

   The complement to a PV cannot be a stative (or an individual level predicate), as (83) shows. Using Diesing (1992) and others to argue statives are IPs (see also Rochette 1988, and Higginbotham 1983:118 for a different account), one can expect that IP complements such as in (83) will not occur, since they do not 'fit' in (80) and (81):[9]

(83) *I saw you be/being tall.

(84) *I saw him know/knowing the answer.

The structure of these complements never allows auxiliary *have* or *be* (except passive) in either English or Dutch, as in (85) and (86) respectively:

(85) *I saw him have crossed the street.

(86) **Ik zag hem de straat zijn overgestoken.*

This is again explained by the structure: since perfect *have* and progressive *be* result in states (see Vlach 1981:287 and Comrie 1976:56), i.e. IPs, they cannot occur with PVs. Once *have* is used, as in (87), the structure changes into one where the *-ing* modifies the subject or object, and a comma intonation occurs between *him* and *having*:

(87) I saw him having crossed the street.

Syntactically, this means that the complement in (1) and (3) is pretty reduced in structure, as shown in (80), not an IP or CP, but a vP in (1) and an ASPP in (3). The complement is reduced in Dutch as well, but can only be an ASPP in (2).

   I will not go into the structure of verbs such as *watch*, the activity PV, but there is evidence that their complement is more like a CP. As Kirsner (1977) has shown, they cannot be passivized, as (88) shows, unlike the two kinds of *see*, as in (89) and (90):

(88) *Nureyev was watched to leap across the stage.

(89) Nureyev was seen to leap across the stage.   (both from Kirsner, p. 174)

(90) He was seen leaping across the stage.

In 5.1, I argue that there are three kinds of *see* in Modern English, two of which are represented in (80) and (81) but that Dutch (and other Germanic languages) do not have the evidential one. In all of the languages, PVs choose ASPP but in English if ASP is imperfective, there needs to be an *ing* marked form, whereas that's not the case in Dutch.

5.2 More evidence

In this section, I examine three further pieces of evidence in favor of (80) and of having three kinds of PV.

First, de Haan (1997:5) argues that evidentials (in Dutch) cannot be in the scope of negation. The same should hold for English *saw* in (1) if it is an evidential, as I argue. Hence, (91) should not exclusively mean that the crossing/drowning is finished. According to native speakers, this is the case. Compared to the non-negative (92), this is even clearer:[10]

(91)   I didn't see her drown, but someone else did and rescued her.

(92)   *I saw her drown and someone else did as well and rescued her.

Hence it is the PV that determines the interpretation of the complement, and a stative *see* ceases to have that effect, when it is negated.

A second piece of evidence, in favor of (80), comes from an old and often-debated problem, namely the different constituent structures of (1), (2), and (3). Akmajian (1977) argues, on the basis of preposing and clefting, that the structures for (1) and (3) are quite different: in (1), the NP and infinitive are separate constituents; in (3), they are not. Hence (93) is grammatical, but (94) is not:

(93)   It was [the moon rising over the mountain] that we saw.

(94)   *It was [the moon rise over the mountain] that we saw.

Applying this to Dutch (95), the result is (96), a somewhat formal construction, where the infinitive patterns with the *-ing* in English:
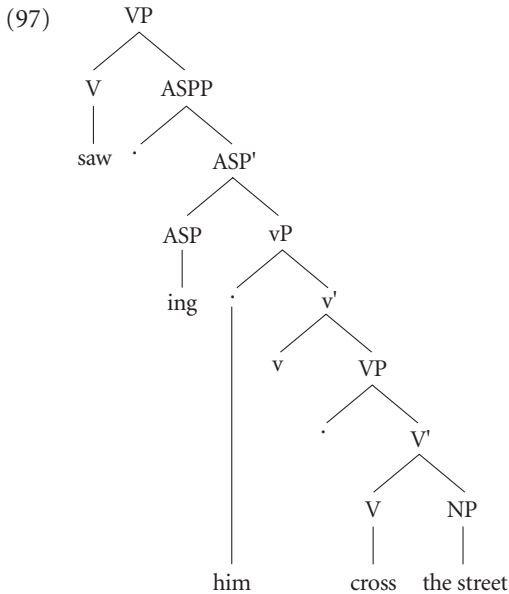
(95)   *We zagen de maan door de bomen schijnen.*
       we saw the moon through the trees shine

(96)   [*De maan door de bomen schijnen*] *is wat we gisteren zagen.*
       the moon through the trees shine is what we yesterday saw

These differences between (1) and (2) come out in the structure, if one argues that *saw* in Modern English is in ASP, as in (80) above, and the embedded

infinitive is bare. In (80), when *saw* is in ASP, the subject *she* moves to Spec IP. Therefore, the trace of *she* inside the ASPP in (94) would not be bound, if it is the ASPP that preposes in (94).

With *-ing*, as in (3), and in Dutch (2), the structure would be as in (97), similar to (80) and (81), i.e. with *see* less grammaticalized, *she* the subject of the higher clause, and the structure bi-clausal. In (97), *cross* moves to ASP and *him* to Spec ASP:

(97)

```
              VP
          /        \
         V          ASPP
         |         /    \
        saw   ·   ASP'
                  /      \
               ASP        vP
                |        /   \
               ing  ·   v'
                       /   \
                      v     VP
                      ·    /   \
                          V'
                        /    \
                       V      NP
                       |      |
              him     cross   the street
```

The difference between (80) with *saw* in ASP and (97) with *saw* in a higher clause accounts for the data in (93) and (94). In (93), the ASPP would move and the trace of the subject would be left un-c-commanded; in (94), there would be no trace. Thus, the crucial difference is either having the subject of *saw* inside or outside of ASPP.

Third, many people, e.g. Kuno (1973: Chap. 18), Dixon (1988: 38), have argued that PVs have complements different from other verbs. On occasion, the complementizer is different (e.g. Japanese); French allows clitic climbing, indicating that there is a close connection between the PV and its complement; and English has *to*-less infinitives. In addition, based on Viberg's (1983) observations, it can be shown that in many languages, English included, stative PVs, such as *saw* in (1), repeated here as (98), are lexically different from non-stative ones (activity based), such as *see* in (79), repeated here as (99), and *look at* (Viberg discusses a third kind but I will leave that out).

(98)   I saw him cross the street.

(99)   Poirot was seeing the face of a girl with red hair.

Viberg provides data from a number of languages, but he is predominantly interested in the different lexical realizations, not in the nature of the difference or the kind of complement.

Certain languages form variants through serial verbs (e.g. Vietnamese and Mandarin Chinese); others through compounds consisting of a noun and a (light) verb. Farsi is a good example of this. In the table Viberg provides (p. 131), it is the activity verbs that have the compound form. The light verb that is included in the compound is typically *kardan* 'do' in Farsi, emphasizing the imperfectivity of the activity-based verb (even though Farsi light verbs are typically more varied, e.g. *harf zadan* 'speak', literally 'letter hit', *yod gereftan* 'learn', literally 'memory get'). PVCs in Farsi (cf. Lambton 1953:155) are not infinitival, like English, but clausal, as in (100), even though (101) is very interesting with *him* 'raised' out of a finite clause.

(100)   *didim   ke   inja   hastand*
        we-saw that here   they-are
        'We saw they are here'.   (from Lambton 1953:155)

(101)   *ura   didam ke   miraft*
        him   I-saw   that is-going
        'I saw him going'.
                    (from Haim's *Larger Persian English Dictionary*, entry for *didan*)

So, from (100) and (101), it appears that *didan* 'see' in Farsi is not grammaticalized into an evidential, but that the activity based ones show imperfectivity through the compound verb.

For Hindi (and the same holds for Urdu), Viberg lists *dekhna* (p. 133) as the equivalent for both 'look at' and 'see'. However, even though *dekhna* 'see' can be used as both (as *didan* can in Farsi), there are many noun-verb compounds for the activity-based verb 'see', namely *nazer kerna*, *malum kerna*, *deryaft kerna*, and *nagah kerna* (see Sant Singh's *Practical Dictionary*). The nouns that are part of the compound in Hindi/Urdu and Farsi are most often loanwords from Arabic and in the case of Hindi/Urdu from Farsi as well (see Platts' *Dictionary*) whereas *dekhna* and *karna* 'do' have cognates in Sanskrit. In Hindi/Urdu, *dekhna* can be complemented by a present participle, as in (102), (comparable to the English -*ing* form) or by a past participle, as in (103) (comparable to the English bare infinitive):

(102) *meN   ne   use   beThte hue dekha*
       I   ERG   him   sitting be   see-PAST
       'I saw him (in the act of) sitting down'.

(103) *meN   ne   use   beThe hue dekha*
       I   ERG   him   sat   be   see-PAST
       'I saw him (in the state of) sitting down'.
       (both from Barker II: 35, with *N* indicating that the preceding vowel is
       nasal, and T that the alveolar stop is retroflex)

In informal speech (Anju Kuriakose p.c.), an infinitive is used as well, as in
(104), but intuitions differ as to the exact (aspectual) interpretation.

(104) *meN   ne   use   jane   dekha*
       I   ERG   him   go-INF   see-PAST
       'I see him go/going'.

The conclusion about Hindi/Urdu and Farsi is that the simple verb is often used
for experiencer based, i.e. stative, meanings, but since it has a clausal comple-
ment, it has not grammaticalized, as in English. The reason for this is that the
difference between experiencer and activity based *see* is expressed in another
way, namely through compounds. Compounds are most often used for activity
based meanings with the light verb emphasizing the imperfectivity.

   Turning to the development of words such as *see, watch, look at* in En-
glish, it was mentioned before that *see* is a very reluctant activity verb and
displays lexical differences between use as state and activity verb, as it does in
Hindi/Urdu and Farsi. As is clear from reflecting on (79), the preferred non-
stative PV is *watch* or *look at*, not the typically stative *see*. In fact, (77) above is
ungrammatical, as opposed to (105) with *watch* (with the object adapted):
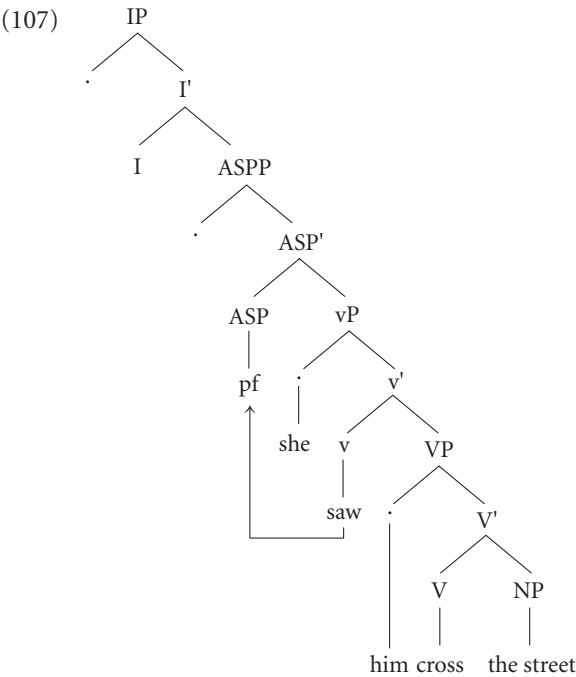
(105)   I am watching that program.

According to the OED, *watch* (or rather its unpalatalized form *wake*) means
'be awake' and 'remain/keep awake' in OE. By 1200, it acquires the meaning of
'be vigilant', and by 1600 or so, it acquires the modern meaning of observing
someone, as in (106):

(106)   Ill watch Titania, when she is asleepe, and drop the liquor of it in her eyes.
                          (Shakespeare, *Midsummer Night's Dream* II, i, 177)

Observe and *perceive* are straightforward loans, the former being a late 14th
century loan with the initial meaning of 'obey, follow' and the latter being an
early 14th century loan. *Peer at, glance, stare* are all quite specialized forms

of non-stative PVs, and in OE, *look at* means 'direct one's sight to', according to the OED. Thus, in OE, the general PV for both stative and non-stative perception is *see*.

So far, I have given several different kinds of evidence that stative *saw* in English in structures such as (1) has a structure as in (80). It is possible to suggest a slight modification of (80) and have *saw* start out in v and move to ASP, as in (107).

(107)

```
                    IP
                   /  \
                  .    I'
                      /  \
                     I    ASPP
                         /    \
                        .     ASP'
                             /    \
                           ASP     vP
                            |      /  \
                           pf    she   v'
                            ↑    .    /  \
                                 v   VP
                                 |  .  \
                                saw    V'
                                      /  \
                                     V    NP
                                     |     |
                                   him cross  the street
```

This means that the subject would receive a theta-role, Experiencer, from *saw* in v, slightly more elegant than *she* receiving a theta-role from an element in ASP. Note that *him* would be a Theme though. Sentences such as (108), pointed out by a number of people, e.g. Guasti (1993) and Felser (1999: 103), would show (Claudia Felser p.c.) that *him/them* would have to move to check Case, and then (108) could have a structure as in (107):

(108)   She saw them all cross the street.

In conclusion, I have shown that there are three kinds of PVs in English, an infrequent activity one, as in (79), a stative, as in (3), and an evidential, as in (1). The former two are main verbs, but the latter is in ASP. There are a number of empirical advantages to (80), or its variant in (107), and (97): (a) charac-

terizing the perfectivity constraint in (1), (b) accounting for the difference in constituent structure between (1) and (3), (c) explaining (1) versus (13) to (17), both in terms of perfectivity and constituent structure, and (d) showing similarities between English, Hindi/Urdu, and Farsi. In Dutch and older English, *zie/see* would not have grammaticalized as far. Sentences such as (1) are grammaticalized: *saw* behaves more like an auxiliary.

6.   Conclusion and further research

In this paper, I questioned the assumption that eventive infinitives without ending are inherently perfectives, as argued by G&P. The reasons for these doubts are that at the time of the loss of the infinitival ending between the 12th and 14th centuries, there is no sudden change in either the interpretation of (1) or the grammaticality of (51). Unconnected bare infinitives, as in (13), are not perfective either, and neither are bare infinitives in Afrikaans. Instead, adapting ideas from Cowper (1999), I argue that the unmarked setting of ASP changes in the 18th century. This causes changes in both the present tense marking and the PVCs.

In addition I show there are three kinds of (visual) PVs in English: a rare activity one, a stative that is a main verb, and a stative that is not a main verb. This explains a number of phenomena. In a Chomsky (1995) framework, the features of ASP can be checked by a perfective *saw,* but then the infinitive will be dependent on the aspect of the PV. In this case, the PV itself has become an auxiliary verb (I call it evidential). The features of ASP can also be checked by an imperfective present participle, in which case the meaning is imperfective. In Dutch, PVs are always full verbs, but their complement is an ASPP.

In an attempt to provide an account of why Modern English on the one hand and Dutch, OE and ME on the other differ, I argued that including an ASPP with unmarked perfective and having *saw* in (1) as an evidential modal explains a number of phenomena: (a) The complementation of PVs in Modern English stem from being in or being lower than ASP, (b) typological differences between languages, and (c) structural differences, e.g. as between (93) and (94).

Notes

helpful discussion, as well as for valuable comments by two referees. I used TACT and the Oxford Text Archive e-texts of Chaucer, Paston, Shakespeare, as well as the 1894 Bartlett Concordance and a Corpus of American Professional Spoken English (available from Athelstan).

1. I am limiting myself mainly to visual perception verbs.

2. There is also a marked construction similar to the *-ing*. This construction may have an ASPP with *aan het* in ASP:

(i)   Ik ben een boek aan het lezen
       'I am reading a book'.

3. In fact, Hyams (2001:221) shows that the English bare infinitive in child language is typically used to indicate ongoing action. This goes against G&P, but Hyams argues this can be explained within G&P's system by saying the perfective constraint is present but aspect is not yet anchored in the tense. This is comparable to (13) to (17) above.

4. There is another change that I can't go into here that involves the compatibility of the Aktionsart of the verb with the imperfective. In Modern English, the imperfective is restricted to activity verbs such as *run* and accomplishment verbs such as *eat* (*an apple*). This is not the case in earlier English where statives could also be marked by *-ing*.

5. A referee mentions that (i), diagnosing non-stativity, is good. Native speakers I have asked say it isn't. If the latter judgement, as in (i), holds, it shows that *saw* is stative:

(i)   *What John did was saw Mary cross the street.

6. In Chomsky (2001), the features on functional categories (FCs) are not valued, and are 'filled in' after being checked (agreed with) by *saw* and *cross* respectively.

7. A semantic notation using the culmination point to distinguish between the two is given in (i) for (1) and in (ii) for (3):

(i) $\lambda P \lambda x \lambda e[seeing(e) \wedge Agent(e,x) \wedge \exists e' \exists t [^{\vee}P(e') \wedge Theme (e, e') \wedge Cul (e,t,P)]]$
(ii) $\lambda P \lambda x \lambda e[seeing(e) \wedge Agent(e,x) \wedge \exists e' [^{\vee} P(e') \wedge Theme (e, e')]]$ (From Zucchi 1998:209)

As mentioned, unlike Cowper, I assume stative have an ASP (and therefore an *e* in her system) but one that is always perfective, or unanalyzable in Comrie's (1976) system.

8. Werner Abraham (p.c.) reports that (82) is grammatical for him in German if the object is left out and Ruyter (1988:269) has data in Dutch as in (82) without an object.

9. As expected, the internal aspect of the complement to an unconnected PV can be an IP, as the grammaticality of (i) shows:

(i)   Seeing her be so healthy is a pleasure.

10. Dik and Hengeveld (1991:241) do not mention this when they discuss negation in English. They show that a PVC cannot be negated, as (i) shows. Native speakers do not seem to be too clear in their judgments, however:

(i)   *He saw the girl not cry/crying.

Abreviations used

1S	first person singular
3M	third masculine
ASP	aspect
COMP	complementizer
ERG	ergative
G&P	Giorgi & Pianesi
IMPF	imperfective in gloss
impf	imperfective in tree
ME	Middle English
INF	infinitive
OE	Old English
OED	*Oxford English Dictionary*
PAST	past
PF	perfect in gloss
pf	perfect
pres	present
PROGR	progressive
PV	perception verb
PVC	perception verb complement

References

Abraham, Werner (1990). "Modalverben in der Germania". *Akten des VIII. Internationalen Germanisten-Kongresses.*

Abraham, Werner (1998). "The Morphological and semantic classification of 'evidentials' and modal verbs in German: the perfect(ive) catalyst". *Groninger Arbeiten zur germanistischen Linguistik, 42*, 192–206.

Abraham, Werner (1999). "Evidentials". *International Conference on Historical Linguistics paper.*

Akmajian, Adrian (1977). "The Complement Structure of Perception Verbs in an Autonomous Syntax Framework". In *Formal Syntax* (pp. 427–460). New York: Academic Press.

Barker, Muhammad et al. (1967). *Spoken Urdu*, 2 vols. Ithaca [1975 edition].

Barnes, Janet (1984). "Evidentials in the Tuyuca Language". *IJAL, 50*(3), 255–271.

Bartlett, John (1894). *A New and Complete Concordance or verbal index to words, phrases, & passages in the Dramatic Works of Shakespeare.* London: MacMillan.

Benson, L. (1987). *The Riverside Chaucer.* Boston: Houghton Mifflin Company.

Brinton, Laurel (1988). *The Development of English Aspectual Systems*. Cambridge: Cambridge University Press.

Buzarovska, Eleni (2000). "On Complementation of English and Russian Verbs of Perception". Manuscript.

Callaway, Morgan (1913). *The Infinitive in Anglo-Saxon*. Washington: Carnegie Institution.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge: MIT Press.

Chomsky, Noam (2001). "Derivations by phase". In Michael Kenstowicz (Ed.), *Ken Hale: A Life in Language* (pp. 1–52). Cambridge: MIT Press.

Comrie, Bernard (1976). *Aspect*. Cambridge: Cambridge University Press.

Cowper, Elizabeth (1999). "Grammatical aspect in English". *The Linguistic Review, 16*, 205–226.

Davis, Norman (1971). *Paston Letters and Papers of the Fifteenth Century*, Part I. Oxford: Clarendon.

Dik, Simon & Kees Hengeveld (1991). "The hierarchical structure of the clause and the typology of perception-verb complements". *Linguistics, 29*, 231–259.

Diesing, Molly (1992). *Indefinites*. Cambridge: MIT Press.

Diesing, Molly & Eloise Jelinek (1995). "Distributing Arguments". *Natural Language Semantics, 3*, 123–176.

Dixon, R. M. (1988). *A Grammar of Boumaa Fijian*. Chicago: Chicago University Press.

Dowty, David (1979). *Word Meaning and Montague Grammar*. Dordrecht: Reidel.

Duncan, D. (1731). *A New English Grammar*. Scolar Press reprint.

Ek, Jan van (1966). *Four Complementary Structures of Predication in Contemporary English*. Groningen.

Felser, Claudia (1999). *Verbal Complement Clauses*. Amsterdam: John Benjamins.

Fischer, Olga (1992). "Factors conditioning Infinitive Marking in late Middle English". *DWPELL, 25*.

Fischer, Olga (1995). "The distinction between *to* and bare infinitival complements in Late Middle English". *Diachronica, 12*, 1–30.

Fisher, Ann (1750). *A New Grammar*. Scolar Press reprint.

Frajzyngier, Zygmunt (1996). *Grammaticalization of the Complex Sentence*. Amsterdam: John Benjamins.

Franz, W. (1909). *Shakespeare-Grammatik* (2nd edition). Heidelberg: Carl Winter.

Gelderen, Elly van (1993). *The Rise of Functional Categories*. Amsterdam: Johna Benjamins.

Gelderen, Elly van (1997). *Verbal Agreement and the Grammar behind its 'Breakdown'*. Tübingen: Niemeyer.

Gelderen, Elly van (2003). "ASP(ect) in Modal Complements". *Studia Linguistica, 57*(1), 27–44.

Giorgi, Alessandra & Fabio Pianesi (1997). *Tense and Aspect*. Oxford.

Gordon, Lynn (1986). "The Development of Evidentials in Maricopa". In Wally Chafe & Johanna Nichols (Eds.), *Evidentiality* (pp. 75–88). New York: Academic Press.

Greenwood, James (1711). *An Essay towards a practical English Grammar*. Menston: Scolar Press.

Guasti, Maria Teresa (1993). *Causative and Perception Verbs*. Torino: Rosenberg & Sellier.

de Haan, Ferdinand (1997). "Evidentiality in Dutch". University of New Mexico MS.

de Haan, Ferdinand (1998). "The Category of Evidentiality". University of New Mexico MS.

Haim, S. (1375). *Farhang Jama' Farsi – Angresi* [The Larger Farsi – English Dictionary]. Tehran.

Hale, Ken & Jay Keyser (1993). "On Argument structure and the Lexical Expression of Syntactic Relations". In Ken Hale & Samuel Keyser (Eds.), *The View from building 20* (pp. 53–109). Cambridge: MIT Press.

Higginbotham, James (1983). "The Logic of Perceptual Reports". *Journal of Philosophy, 80*(2), 100–127.

Hoekstra, Teun & Nina Hyams (1998). "Aspects of Root Infinitives". *Lingua, 106*, 81–112.

Hyams, Nina (2001). "Unanchored Expressions in Child Language". *Proceedings of COE International Symposium*, 211–236.

Ikawa, Hisako (1999). *Events and Anaphoric Processes*. University of Arizona dissertation.

Jelinek, Eloise (1997). "Functional Projections and Clitics". University of Arizona Manuscript.

Jespersen, Otto (1931). *Modern English Grammar* IV. London: Allen & Unwin Ltd.

Julien, Marit (2001). "The Syntax of Complex Tenses". *The Linguistic Review*, 125–167.

Kerkhof, J. (1966). *Studies in the Language of Geoffrey Chaucer*. Leiden: Universitaire Pers.

Kirsner, Robert (1977). "On the passive of sensory verb complement sentences". *Linguistic Inquiry, 8*(1), 173–179.

Kökeritz, Helge (1954). *Mr. William Shakespeares Comedies, Histories and Tragedies*. Facsimile edition of the First Folio of 1623. New haven: Yale University Press.

Kuno, Susumu (1973). *The Structure of the Japanese Language*. Cambridge: MIT Press.

Lambton, A. (1953). *A Persian Grammar*. Cambridge: Cambridge University Press [1990 reprint].

Lane, A. (1700). *A key to the art of letters*. Scolar Press reprint.

Miege, Guy (1688). *The English Grammar*. Scolar Press.

Miller, Gary (2002). *Nonfinite Structures in Theory and Change*. Oxford: Oxford University Press.

Minkova, Donka (1991). *The History of Final Vowels in English: The Sound of Muting*. Berlin: Mouton de Gruyter.

Moore, Samuel & Albert Marckwardt (1951). *Historical Outlines of English Sounds and Inflections*. Anne Arbor: George Wahr.

Mossé, Fernand (1938). *Histoire de la Forme périphrastique **être** + participe présent en germanique*. Paris: Klincksieck.

Mulcaster (1582). *Elementarie*. Menston: Scolar Press.

Mustanoja, Tauno (1960). *A Middle English Syntax*. Helsinki.

Oxford English Dictionary (*OED*) (1933). Oxford: Oxford University Press.

Parsons, Terence (1990). *Events in the Semantics of English*. Cambridge: MIT Press.

Pessels, Constance (1896). *The Present and Past Periphrastic Tenses in Anglo-Saxon*. Trubner: Strassburg [Johns Hopkins diss.].

Platts, John (1884/1982). *A Dictionary of Urdu, Classical Hindi, and English*. Oxford: Oxord University Press.

Ponelis, F. A. (1991). *Afrikaanse Sintaksis*. Pretoria: van Schaik.

Practical Dictionary (1987). Delhi: J. S. Sant Singh Publishers. 17th edition.

Ruyter, Lyda (1988). "Bare Infinitivals, INFL and pseudo-progressives in Dutch". *McGill Working Papers in Linguistics* [special issue], 260–279.

Quirk, Randolph et al. (1985). *Comprehensive Grammar of the English Language*. London: Longman.

Raith, Josef (1951). *Untersuchungen zum englischen Aspekt*. Munchen: Max Huber.

Ramchand, Gillian (1997). *Aspect and Predication*. Oxford: Clarendon Press.

Scheffer, Johannes (1975). *The Progressive in English*. Amsterdam: North Holland Publishing.

Slobin, Dan & Ayhan Aksu (1982). "Tense, Aspect, and Modality in the use of the Turkish Evidential". In *Tense-Aspect: Between Semantics and Pragmatics* (pp. 185–200). Amsterdam: John Benjamins.

Southworth, James (1947). "Chaucer's final -e in Rhyme". *Proceedings of the Modern Language Association, 42*, 910–935.

Speas, Margaret (1990). *Phrase Structure in Natural Language*. Dordrecht: Kluwer.

Streitberg, W. (1891). "Perfektive und imperfektive Aktionsart im Germanischen". *Beiträge zur Geschichte der deutschen Sprache und Literatur, 15*, 70–177.

Tenny, Carol (1987). *Grammaticalizing Aspect and Affectedness*. MIT PhD.

Traugott, Elizabeth (1972). *The History of English Syntax*. New York.

Travis, Lisa (2000). "The L-Syntax/S-Syntax Boundary". In *Formal Issues in Austronesian Linguistics* (pp. 167–194). Dordrecht: Kluwer.

Viberg, Åke (1983). "The Verbs of Perception: a typological study". *Linguistics, 21*, 123–162.

Visser, F. Th. (1946–1952). *A Syntax of the English Language of St Thomas More, Vol. I and III*. Leuven: Librairie Universitaire.

Visser, F. Th. (1963–1973). *An Historical Syntax of the English Language I-IIIb*. Leiden: Brill.

Vlach, Frank (1981). "The Semantics of the Progressive". In Philip Tedeschi & Annie Zaenen (Eds.), *Syntax and Semantics: Tense and Aspect* (pp. 272–292). New York: Academic Press.

Wharton, J. (1654). *The English Grammar*. Scolar Press reprint.

Zeitlin, Jacob (1908). *The ACI and Some Kindred Constructions in English*. Columbia PhD.

Zickner, B. (1900). *Syntax und Stil in Pecock's Repressor*. Berlin: Greifswald dissertation.

Zucchi, Sandro (1999). "Incomplete events, intensionality and imperfective aspect". *Natural Language Semantics, 7*, 179–215.

The problem of unintelligibility

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1. Introduction

When does an utterance make sense?[1] To answer this question it might be helpful to study utterances that do not make sense. Surely, there are many different types of utterances that do not make any sense. In this squib I will examine one particular type, namely when a syntactically well-formed expression does not obtain a felicitous interpretation. I will call this the problem of *unintelligibility*, the natural counterpart of the problem of *ineffability*, well-known in Optimality Theory.

2. Ineffability

Ineffability refers to the problem when a semantic input does not yield a well-formed syntactic expression as its output. It is considered a problem since in Optimality Theory (henceforth, *OT*) each input should give rise to at least one optimal output (Prince & Smolensky 1993, 1997).

Crucially, in OT, an output can never be rejected because the constraints it violates are too numerous or too strong. An output can be rejected for one reason only: there is a better alternative in the set of possible outputs. Given the theorem of Harmony maximization (Smolensky 1986), each input is assigned an output with maximal Harmony and this output can be considered the optimal parse according to the relevant set of constraints. When therefore an input does not give rise to an optimal output, this is a problem either for the theory in general, or for the particular analysis of the input-output mapping under consideration. An example of an input that does not yield a grammatical output

can be found in Jelinek (1993). She refers to the excluded sentence type (1d) in Lummi (a Straits Salish language spoken in Canada) as a "paradigm gap":

(1) a. xči-t-oŋ əs=sən   "I know you."
     b. xči-t-Ø=sən   "I know him."
     c. xči-t-s=Ø   "He knows him."
     d. *   "He knows me."
     e. xči-t-ŋ=sən   "I am known."

There is no transitive sentence corresponding to (1d) where a third person agent acts upon a first person patient. Hence there is no syntactically well-formed output corresponding to an input meaning 'He knows me' in this language. Instead, a passive construction such as in (1e) can be employed.

Suppose a speaker of this language wants to express *He knows me*, but can't, since it would be ungrammatical in her language. What will be her solution? Jelinek (1993) describes this situation for speakers of Lummi, for which *He knows me* is ungrammatical, indeed. Jelinek: "Leading a linguistically naive Lummi speaker through a paradigm of this kind is very instructive. When asked to produce an ungrammatical transitive, the consultant comes to a halt, appears lost for a moment, and then triumphantly (if uneasily) comes up with the passive" (Jelinek 1993:27).

Clearly, the problem of ineffability as illustrated by the paradigm in (1) is a problem for the general theory of OT which predicts each input to be assigned an output after evaluation against a ranked set of constraints. The problem only arises, however, in the context of a limited set of candidate outputs. Once one would allow for the passive construction in (1e) to become part of the candidate set of syntactic outputs, there would be an optimal output for (1d), namely (1e). More in general, one could argue that any semantic object a speaker at a certain time in a given discourse would want to express, should find an optimal output of some kind, which, in a rather extreme case, may even be a non-linguistic one.

3. Unintelligibility

The topic of this squib is the problem of unintelligibility, which may be viewed as the natural counterpart of ineffability within OT semantics. Whereas in OT syntax the process of optimization maps a semantic input onto its optimal syntactic structure, in OT semantics, a syntactic input is assigned an optimal interpretation (see Hendriks & De Hoop 1997, 2001, for a first elaboration of

this approach). The problem arises when there does not seem to be an optimal interpretation in the candidate set of interpretation outputs for a certain input.

Dekker and Van Rooy (2000) point out that the ideal situation in communication would be a one-to-one relation between the set of possible representations and the set of possible meanings. Ambiguity obtains in situations in which the set of solutions is one-to-many, whereas optionality may be characterized as many-to-one. They add that when certain possible meanings do not occur in solutions we have expressive incompleteness. Obviously, this is what is called *ineffability*. Likewise, I would like to add that when certain possible forms cannot be interpreted, we have comprehensive incompleteness, that is, *unintelligibility*.

Of course, like the problem of ineffability briefly discussed above, whether the problem of unintelligibility is considered to be a real problem for the theory, highly depends on whether or not one wishes to restrict the candidate set of outputs. I will argue in this paper that the problem of unintelligibility is partly solved when one allows for an infelicitous interpretation to be the optimal one for a certain syntactic input.

In the following example, *every German* can be interpreted as *every German who has a car*, the presupposition triggered by the object *his car* (cf. Geurts & Van der Sandt 1999):

(2)   Every German is proud of his car.

However, as Beaver (1994) notes, *every team member* in (3) cannot be interpreted as *every team member who has a car*, despite the fact that an object *his car* is present that should trigger the presupposition, as was possible in (2).[2]

(3)   #Few of the team members can drive, but every team member will come to the match in his car.

Geurts and Van der Sandt (1999) argue that the second determiner *every* preferably lives on the entire set of team members, instead of on the set of team members that can drive. This would give rise to the infelicitous interpretation, since how can people come to the match in their (own) cars, if they cannot drive? I think that Geurts and Van der Sandt are correct in that this is indeed the infelicitous interpretation obtained for sentence (3). The question remains to be answered why this interpretation is the only possible one. Or, why does (3) not allow for a reading as the one that is naturally assigned to the utterance in (4)?

(4)   Few of the team members can drive, but every team member that can will come to the match in his car.

If I understand their analysis correctly, Geurts and Van der Sandt do not provide a satisfactory answer to that question. They point out that in (3) the hearer must identify a suitable set of team members. There are two sets available in the linguistic context, the entire set of team members and the set of team members that can drive. They note that "the hearer will decide to bind the presupposition triggered by *every team member*" to the first set, the set of all team members. But they do not explain why the hearer decides to do so.

Unlike suggested by the account of Geurts and Van der Sandt, it is not in general the case that a second determiner in a discourse quantifies over the same set as the first determiner (set A) rather than over the intersection of the sets related by the first determiner (A∩B). In Hendriks and De Hoop (2001) two conflicting constraints are formulated that account for the interpretations obtained in (5) and in (6) (cf. Nerbonne, Iida, & Ladusaw 1990).

(5)   Most students attended the meeting. Some spoke.

(6)   Most deliveries were on time. Some weren't.

In (5) the preferred domain of quantification for the second determiner, *some*, is the set of students that attended the meeting (that is, the intersection of the sets A and B related by the first determiner, *most*). In (6), however, the domain of quantification for the second determiner, *some*, is not the set of deliveries that were on time, but the entire set of deliveries (set A of the first determiner, *most*). Intuitively, it is clear why. If *some* would quantify over the set of deliveries that were on time, we would get a contradictory interpretation, viz. that some deliveries that were on time weren't on time. In Hendriks and De Hoop (2001) the contrast between the preferred readings of (5) and (6) is explained with the help of four conflicting constraints, *viz.*, Avoid Contradiction, Topicality, Forward Directionality, and Parallelism.

(7)   *Avoid Contradiction.*

(8)   *Topicality*: As the antecedent of an anaphoric expression, choose a discourse topic.

(9)   *Forward Directionality*: The original topic range induced by the domain of quantification of a determiner is reduced to the topic range induced by the intersection of the two argument sets of that determiner.

(10)   *Parallelism*: As the antecedent of an anaphoric expression, choose a parallel element from the preceding clause.

Forward Directionality (adapted from a notion of Van Kuppevelt 1996) favours the intepretation obtained in (5). In (6) Forward Directionality is violated. On the other hand, Avoid Contradiction and Parallelism favour the interpretation obtained in (6). As the reader may verify, the ranking in (11) accounts for these interpretations:

(11) *Avoid Contradiction >> Topicality >> Forward Directionality >> Parallelism*

This ranking also predicts the right interpretations for (12) and (13) (boldface is mine).

(12) **These Thracians** are peasants. **They** fight two or three times a year, in a cattleraid or a brawl. **Most of them** are stupid, **none of them** are trained.
(*Fire from heaven* by Mary Renault 1984:150)

In (12) a discourse topic is introduced, *these Thracians*. Hence, the anaphora *they* and *them* refer back to this discourse topic, thus satisfying Topicality.

(13) At the town gates, horses and helpers were waiting by arrangement, and Pausanias seemed certain to escape. Only a few strides more and he would have been among them, but he overreached in his haste to jump astride; tripping, he fell, for his boot had caught in the trailing stem of a vine. At once **three of his pursuers** were on him, **all of them** highland nobles, **one** from his own kingdom. But familiarity meant nothing and **they** killed him, **some** said then and there; **others** claimed more plausibly that they dragged him back to the theatre where he could be questioned for accomplices and then condemned to death.
(*Alexander the Great* by Robin Lane Fox 1973:21)

In (13) no such discourse topic as in (12) is available. The determiner *three* relates the set of pursuers and the set of individuals being "on him". The intersection of these two sets functions as the domain of quantification of *all*, in accordance with Forward Directionality. Thus, Parallelism is violated in order to satisfy the higher ranked constraint Forward Directionality, which accounts for the fact that the topic range is narrowed from the set of pursuers to the set of pursuers that were on him. The next determiner *one* takes again the intersection of the sets related by the previous determiner, in this case the set of pursuers that were on him that were highland nobles. Here of course, since all of the pursuers that were on him were highland nobles, we cannot distinguish the interpretation obtained when Forward Directionality is satisfied, from the interpretation obtained when Parallelism is satisfied. In the next sentence, *they*,

because it is plural, cannot refer to the one highland noble from his own kingdom, and therefore it has to refer to the domain of quantification of *one*, once again the set of pursuers that were on him.

The quantifier *some* could again quantify over this set of killers, but for some readers this would yield some kind of incoherent (not really contradictory, though) interpretation. *They* killed Pausanias and of course, *they* should know when and where they did it. A different option (preferred by other readers, including myself) would be to let *some* quantify over an entirely different set of individuals, for instance the set of Alexander's historians. Now, *others* inherently cannot quantify over the historians that "said then and there" (i.e., *others* by definition excludes coreference with respect to *some*). Apart from that, quantifying over the historians that "said then and there" would involve a violation of Avoid Contradiction. That is, Forward Directionality has to be violated in order to satisfy Avoid Contradiction. And by this necessary violation of Forward Directionality, we witness the emergence of a parallel interpretation, in accordance with the weaker constraint Parallelism. The optimal interpretation that satisfies Avoid Contradiction and Parallelism is obtained when the domain of quantification of *others* is the same as that of *some*, i.e., the set of Alexander's historians. For reasons of space, I do not provide the relevant tableaux. The reader is kindly invited to evaluate the candidate interpretations against the constraint ranking given above.

At this point, consider the intepretations that result from replacing one or all of the anaphors in the fragment above by fully descriptive nominal constituents.

(14)   a.   At once **three of his pursuers** were on him, **all of his pursuers** highland nobles, **one** from his own kingdom. But familiarity meant nothing and **they** killed him, ...

   b.   At once **three of his pursuers** were on him, **all of them** highland nobles, **one** from his own kingdom. But familiarity meant nothing and **his pursuers** killed him, ...

   c.   At once **three of his pursuers** were on him, **all of his pursuers** highland nobles, **one of his pursuers** from his own kingdom. But familiarity meant nothing and **his pursuers** killed him, ...

Clearly, when a full descriptive noun phrase in (14a) is used, the resulting interpretation no longer satisfies Forward Directionality. Instead of going from A to (A∩B) (from the set of pursuers to the set of pursuers that were on him), it seems as if the use of a full expression has the effect of going from (A∩B) to the superset A (the whole set of pursuers) again. In the original fragment (13) that

contained an anaphor, *all* was interpreted as quantifying over the set of pursuers that were on him. In the optimal interpretation of (14a), *all* quantifies over the whole set of pursuers, thus violating Forward Directionality. This has consequences for the rest of the discourse. Now, *they* also refers to the whole set of pursuers (who all happen to be highland nobles) and not to the restricted set of pursuers that were on him. In (14b) by the use of the full noun phrase *his pursuers* we get the interpretation that the killing was done by his pursuers, not necessarily by the restricted set of pursuers that were on him and that were highland nobles. In (14c), the lack of anaphoric expressions renders the fragment unnecessarily explicit and artificial, but the interpretation we get is that every predicate is evaluated with respect to the entire set of his pursuers and never to a subset.

Recall Beaver's problematic (unintelligible) example in (3) above. In (3), too, Forward Directionality seems to be violated. That is, the second determiner, *every*, cannot anaphorically pick up the interesection of the two argument sets related by the first determiner, *few*. Why not? I claim that the solution to this problem is in the explicit use of the NP *team member*. If an anaphor would have been used instead, Forward Directionality could have been satisfied, as in (15):

(15)   Few of the team members can drive, and every one (of them) will come to the match in his car.

Note that I made two changes in (15) compared to (3). First, I replaced the full nominal constituent *every team member* by an anaphoric noun phrase *every one (of them)*. Secondly, I substituted the connective *and* for *but*.[3] In the next section I will provide an analysis of the problem of unintelligibility along these lines.

4.   Towards solving the problem

One way to account for the infelicity of (3) above would be to have an additional well-known pragmatic constraint like Be informative to be ranked above Avoid Contradiction in our previous ranking:

(16)   *Be Informative*: a. Don't say less than necessary;
                        b. Don't say more than necessary.

If we consider the two relevant interpretations for (3), one where *every* quantifies over the set of team members and another one where it quantifies over

the set of team members who can drive, then we may argue that the first interpretation violates Avoid Contradiction and Forward Directionality. It is still the optimal interpretation, however (hence, the only interpretation we get), since it satisfies the higher ranked constraint Be Informative (the use of the full NP is necessary to get the superset interpretation again, as was showed in (14)). The other interpretation would be a violation of Be Informative. In fact, it violates either (16a) or (16b). One way to obtain the subset interpretation is by using an anaphor, as was shown in (15). In that sense, the use of a full NP as in (3) would be a violation of (16b). There is another way to get the desired subset interpretation, and that is by making that reading fully explicit in a complex noun phrase, as was done in (4) above. Then the mere use of the NP *team member* would violate (16a). So, the expression *every team member* in (3) is either too much (violating (16b)) or too little (violating (16a)) for the intended interpretation *every team member that can drive*. Since there is an alternative interpretation available that does not violate Be Informative in one way or another, this is the optimal interpretation we get for (3). Yet, the optimal interpretation is a contradictory interpretation (few of the team members can drive, but the whole set of team members will come to the match in their cars), one that satisfies Be Informative yet violates Avoid Contradiction, as shown in the tableau in (17).

(17) A is the set of team members; $A \cap B$ is the set of team members that can drive.

every team member	Be informative	Avoid Contradiction	Forward Directionality	Parallelism
☞ {X: A⊆X}		*	*	
{X: A∩B⊆X}	*			*

So the preliminary conclusion must be that, once we allow contradictory interpretations in the candidate set of interpretations, unintelligibility does not arise. This is reminiscent of the approach we favored in the case of ineffability: as long as we can extend the candidate set of expressions, ineffability does not exist. With respect to the paradigm in (1) we concluded that a passive construction was the optimal expression for the input representation 'He knows me'. With respect to the example in (3) we conclude that a contradictory interpretation is the optimal interpretation for the input sentence (3).

5.   Unintelligibility in a bidirectional OT framework

In fact, it is not surprising that more or less contradictory interpretations can be optimal, since we do get these interpretations every now and then. Consider for example (18):

(18)   Most female professors are men with beards or glasses.

The only, hence optimal, yet contradictory, interpretation we get for (18) is that the number of female professors who are men with beards or glasses exceeds the number of female professors who are not men with beards or glasses.

Note, however, that intuitively there is a crucial difference between (18) and (3). In (18) the problem of unintelligibility does not seem to arise. That is, although the interpretation one gets in (18) is weird and contradictory, it is by all means the one and only interpretation, hence the optimal one, and we get it without any problems. Instead, in (3) we encountered the problem of unintelligibility. In the remainder of this squib, I will put forward a suggestion how to deal with this difference between (18) and (3).

In the explanation proposed above for the oddness of (3) the hearer finds the optimal interpretation by evaluating the candidate interpretations with respect to Be Informative. Obviously, Be Informative is a constraint that must have played a role in generating the optimal form (the speaker's perspective). Blutner's (2000) framework goes one step further and takes the effects of the interaction of the speaker's and the hearer's perspective to a higher level of abstraction. Blutner integrates optimal interpretation and optimal production in a bidirectional OT.

The basic idea of bidirectional OT is to simultaneously optimize in both directions, from form to meaning and from meaning to form. That is, bidirectional OT adds to the general procedure of optimization that the hearer takes into account the speaker's perspective (and, the other way around, the speaker takes into account the hearer's perspective). That is, if a form is associated with a certain interpretation within a certain context by a hearer, then within that same context, the same meaning would have been expressed by the same form, if the hearer would have been the speaker. In other words, the composition of a form-meaning pair within a context goes hand in hand with the decomposition of that form-meaning pair within that same context. Crucially, bidirectional optimization involves the evaluation of form-meaning *pairs* against a set of ranked (cross-modular) constraints.

Instead of giving the relevant definitions of how to determine which pairs of forms and meanings are optimal, I will just provide a schematic example

in order to illustrate the basic characteristics of bidirectional OT (cf. Blutner 2000; Dekker & Van Rooy 2000). Assume that we have two forms f_1 and f_2 and two meanings m_1 and m_2. Let us stipulate that the form f_1 is less marked (more harmonic) than the form f_2, which means that for a given meaning, form f_1 will be the optimal form. Furthermore, interpretation m_1 is less marked (more harmonic) than the interpretation m_2, which means that for a given form, meaning m_1 will be the optimal meaning. Thus, the following ordering relation between form-meaning pairs can be derived, represented in an arrow diagram, where the arrows point to the preferred pair.

$$\begin{array}{ccc} <f_1, m_1> & \longleftarrow & <f_2, m_1> \\ \uparrow & & \uparrow \\ <f_1, m_2> & \longleftarrow & <f_2, m_2> \end{array}$$
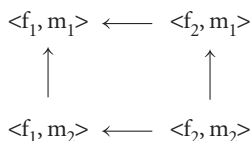
In Blutner's (2000) framework a form-meaning pair $<f, m>$ is called *super-optimal* if and only if there is no other super-optimal pair $<f', m>$ such that $<f', m>$ is more harmonic than $<f, m>$ and there is no other super-optimal pair $<f, m'>$ such that $<f, m'>$ is more harmonic than $<f, m>$. The reader may verify that according to this definition, there are two super-optimal pairs in the diagram in (21), namely $<f_1, m_1>$ and $<f_2, m_2>$. Indeed, although f_2 is not an optimal form itself and m_2 is not an optimal meaning, the pair $<f_2, m_2>$ is super-optimal, because there is no super-optimal pair that blocks it (that is, the two candidates $<f_1, m_2>$ and $<f_2, m_1>$ are not super-optimal, because they are both blocked by the other super-optimal pair $<f_1, m_1>$).

    Thus, bidirectional OT provides us with two super-optimal form-meaning pairs, in accordance with the markedness principle (Horn 1984): the un-marked form goes with the unmarked meaning, and the marked form with the marked meaning.

    Let us now give a bidirectional OT analysis of the data under discussion in this paper, which will make the postulation of a constraint such as Be informa-tive superfluous. I assume that the interpretation where Forward Directionality is satisfied (the subset – A∩B – interpretation) is the unmarked (most har-monic, most frequent) interpretation for the argument of a second determiner in the discourse. The other interpretation (that is, the superset – A – interpre-tation), the one where Forward Directionality is violated, is then the marked interpretation. The anaphoric form is the most harmonic (economical), hence unmarked form for an NP. Thus, a full NP counts as a marked form. The ordering relations are illustrated by means of the following diagram:

```
<anaphor, A∩B>   ←——   <non-anaphor, A∩B>

        ↑                        ↑

<anaphor, A>     ←——   <non-anaphor, A>
```
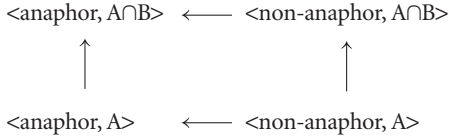
The picture above shows the derivation of two super-optimal pairs of form and meaning: the anaphoric form goes with the subset interpretation (the unmarked super-optimal pair), whereas the non-anaphoric form goes with the superset interpretation (the marked super-optimal pair). In our example (3), we obtain a marked (superset) interpretation for a marked (non-anaphoric) form, hence a (marked) super-optimal pair.

Crucially, it is in this respect that the weird interpretation in (3) differs from the weird interpretation we get in (18). The optimal interpretation that we get for (3) is part of a marked super-optimal pair. There is another super-optimal pair of course, consisting of an unmarked form and an unmarked interpretation, the one we encounter in (15). Of course, this other super-optimal pair is not a true alternative for the marked one, since the unmarked form would not yield the marked interpretation and the marked interpretation would not arise for the unmarked form. In (18), on the other hand, although the interpretation we get is contradictory, it is part of an unmarked super-optimal pair. There is only one form – the unmarked form – and only one interpretation – the unmarked interpretation – unmarked, despite the fact that this interpretation is blatantly contradictory. The sentence *Most female professors are men* is an unmarked form of the type *Most As are Bs* and it gets a concomitant unmarked interpretation, namely that $|A∩B| > |A\text{-}B|$. To put it differently, a contradictory interpretation is not necessarily a marked interpretation; neither is a marked interpretation necessarily a contradictory one. But when a marked interpretation evoked by a marked form, is in fact a contradictory interpretation, we get unintelligibility. That is, unintelligibility arises when an inconsistent meaning emerges as part of a marked super-optimal form-meaning pair.

6.   Conclusion

I hope to have shown in this squib that the problem of unintelligibility in Optimality Theory is not a real problem for the theory, once we recognize that sometimes infelicitous interpretations might be optimal and hence should be part of the candidate set of interpretations. Unintelligibility is more than a

violation of Avoid Contradiction, however. Unintelligibility arises when an incoherent meaning is part of a marked super-optimal form-meaning pair in the sense of Blutner (2000).

Notes

1. The first draft of this squib was written in 2000 when I stayed at the University of Potsdam, Germany. I would like to thank the Interdisciplinary Center for Cognitive Science and the General Linguistics Department in Potsdam for inviting me, and for creating such a pleasant and stimulating atmosphere. An anonymous reviewer kindly commented upon an earlier version of this squib. I thank Reinhard Blutner, Jennifer Spenader, and my colleagues from the NWO Cognition project *Conflicts in Interpretation* and the PIONIER project *Case cross-linguistically* for illuminating and continuing discussions on OT semantics. The Netherlands Organisation of Scientific Research is gratefully acknowledged (grants 220-70-003 and 051-02-070).

2. Blutner (2000) argues that sentence (3) actually indicates that the interpretation given for (2) is not the right one and that the right interpretation would be "Every German has a car and is proud of it" instead of "Every German who has a car is proud of it." Blutner claims that this explains the infelicity of (3), since that should be interpreted as "Few of the team members can drive, but every team member has a car and will come to the match in his car." I do not think Blutner's judgements can be maintained, however. I would claim, in accordance with Geurts and Van der Sandt, that "Every German is proud of his children" means "Every German who has children is proud of them" rather than "Every German has children and is proud of them."

3. I thank Sharon Unsworth for pointing out to me the necessity of this substitution since *but* triggers an effect of contrast. It was pointed out by Kaan and Wijnen (2001) in a study on semantic processing, that when predicates evoke contrasts, there is a preference for a parallel interpretation of the second noun phrase, thus violating Forward Directionality and satisfying Parallelism. See De Hoop and De Swart (2004) for an extensive discussion of the role of contrast to the coherence of the discourse.

References

Beaver, David (1994). "Accommodating Topics". In Peter Bosch & Rob van der Sandt (Eds.), *Focus and Natural Language Processing. Volume 3: Discourse* (pp. 439–448). Heidelberg: IBM.

Blutner, Reinhard (2000). "Some Aspects of Optimality in Natural Language Interpretation". *Journal of Semantics, 17*, 189–216.

Dekker, Paul & Robert van Rooy (2000). "Bi-Directional Optimality Theory: an Application of Game Theory". *Journal of Semantics, 17*, 217–242.

Geurts, Bart & Rob van der Sandt (1999). "Domain Restriction". In Peter Bosch & Rob van der Sandt (Eds.), *Focus. Linguistic, Cognitive and Computational Perspectives*. Cambridge: Cambridge University Press.

Hendriks, Petra & Helen de Hoop (1997). "On the interpretation of semantic relations in the absence of syntactic structure". In Paul Dekker, Martin Stokhof, & Yde Venema (Eds.), *The Proceedings of the 11th Amsterdam Colloquium* (pp. 157–162). Amsterdam: ILLC/Department of Philosophy.

Hendriks, Petra & Helen de Hoop (2001). "Optimality Theoretic Semantics". *Linguistics and Philosophy, 24*, 1–32.

Hoop, Helen de & Peter de Swart (2004). "Contrast in Discourse". *Journal of Semantics, 21*, 87–93.

Horn, Larry (1984). "Towards a new taxonomy of pragmatic inference: Q-based and R-based implicature". In D. Schiffrin (Ed.), *Meaning, form, and use in context: Linguistic applications* (pp. 11–42). Washington: Georgetown University Press.

Jelinek, Eloise (1993). "Ergative "Splits" and Argument Type". In Jonathan D. Bobaljik & Colin Philips (Eds.), *Papers on Case & Agreement. MIT Working Papers in Linguistics, 18* (pp. 15–42).

Kaan, Edith & Frank Wijnen (2001). "Interpreting anaphoric quantifiers in context". Paper presented at the *14th Annual CUNY Conference on Human Language Processing*, University of Pennsylvania, Philadelphia.

Kuppevelt, Jan van (1996). "Directionality in Discourse: Prominence Differences in Subordination Relations". *Journal of Semantics, 13*, 363–395.

Nerbonne, John, Masayo Iida, & William Ladusaw (1990). "Semantics of Common Noun Phrase Anaphora". *The Proceedings of WCCFL IX*. CSLI: Stanford.

Prince, Alan & Paul Smolensky (1993). *Optimality Theory: Constraint Interaction in Generative Grammar*. Unpublished manuscript (to appear, MIT Press).

Prince, Alan & Paul Smolensky (1997). "Optimality: From Neural Networks to Universal Grammar". *Science, 275*, 1604–1610.

Smolensky, Paul (1986). "Information Processing in Dynamical Systems: Foundations of Harmony Theory". In David Rumelhart et al. (Eds.), *Parallel Distributed Processing. Explorations in the Microstructure of Cognition*. Cambridge, MA: MIT Press.

VP-internal subjects as 'unaccusatives'

Burzio's 'Object Account' vs. the 'Perfectivity Account'

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> Thousands of linguists throughout the world have been trying
> for decades to figure out the principles behind grammatical patterns
> of various languages [...]. But any linguist will tell you that we are nowhere
> near a complete account of the mental grammar for any language.
> Ray Jackendoff (1994: 26)

1. A brief intellectual history of 'Burzio's Generalization'[1]

Since Perlmutter/Postal (1984) and Burzio (1993), the basic valence distinction of verbs has been extended by a subclass of intransitives, i.e. 'ergatives' or 'unaccusatives'. The distinction is held to be universal in that the emerging subject of such 'unaccusatives' is claimed to share crucial properties with structural 'direct objects'. There are thus two fundamentally different types of intransitives, or monovalent verbs: those with 'true', i.e. VP-external, subject-arguments; and those with 'non-true', i.e. direct-object-like, external arguments. The latter are called 'ergative' (vs. 'unergative') verbs. Burzio's generalization (Burzio 1993) is an extension of this notion. In a recent collection of papers on this topic, 'Burzio's Generalization' (=BG, henceforth) in Reuland (2000), all but one paper try to make sense of what they clearly consider to be an epiphenomenon. In doing so in various ways, none is a priori better than any of the others (Peeters 2002: 683). Why would BG be an epiphenomenon, in the first place?

To answer this question, let us first review what BG actually says (Burzio 1986: 178–179, 184).

(1) a. "A verb which lacks an external argument fails to assign accusative case."
     b. "A verb which fails to assign accusative case fails to theta-mark an external argument."

or symbolically summarized Burzio (1986: 185; 'A' for '(abstract) Accusative', 'T' for 'theta role'):

(2) $-ACC_{struct} \leftrightarrow -T_{ext}$

(3) a. $\neg ACC_{structural} \leftrightarrow \neg\theta_{external}$

In a reading which follows directly from (1a), non-agentivity on the external argument and the internal argument status ('direct object') can be related in the following way:

(3) b. $\neg AG \leftrightarrow \neg DO$

The various formulations and formula representations clearly show why BG is an epiphenomenon. First, in generative grammar, there is no theoretically motivated link between the absorption (or non-assignment) of a θ-role (as with passivization or middle construction) and the absorption (or non-assignment) of (abstract) accusative Case (Laka 2000: 105). The assignment of θ-roles is a matter dealt with in theta-theory, whereas the assignment of Case comes under Case theory. The exact relationship between both theories remains a contentious issue and is at best addressed by linking theories. No systematization is brought forward, however, under the linking view. Second, equally important, it is a feature of BG is that it is far from applying across the board. It does not apply in fully ergative languages (where, as a matter of course, (abstract) accusative Case is *never* assigned; see Marantz 2000); more importantly, most contributors remind us that there are exceptions even in accusative languages. We shall return to this issue. Third, Burzio's provision that his case notion in BG ('Case') is abstract, i.e. non-morphological, makes the generalization less than empirically testable and, as a consequence, not falsifiable (certainly in those languages where case is not determined by position). I will address these three issues in turn.

One must bear in mind that avoidance of the abstract Case notion through reference to the Extended Projection Principle (EPP) likewise fails to meet empirical facts in a wide number of languages, among which Icelandic and German. Marantz (2000) claims that, rather than relying on abstract Cases and hence on Case theory, the extended projection principle (EPP) and a notion of "dependent case" account for the facts that Burzio had in mind. Accord-

ing to the EPP, sentences have subjects: whenever the mapping from argument structure to syntactic structure results in an unfilled subject slot, that slot will typically be filled through movement of the object, a derivation which, in accordance with standard generative assumptions on economy, is preferred over the insertion of a dummy and which was previously attributed to the *absence* of an external theta-role. Dependent cases – i.e. ACC(usative) and ERG(ative) – are assigned if and only if the subject and the object belong to distinct chains, i.e. if and only if there has been no object-to-subject movement. The direction of the dependency differs: ACC is assigned *down* to the object if NOM(inative) is assigned to a subject belonging to a different chain; ERG is assigned *up* to the subject if ABS(olutive) is assigned to an object belonging to a different chain. According to this assumption, ACC is "dependent" on NOM, and ERG on ABS. As for Marantz (2000), his theory should replace Burzio's. However, as we shall see, there are verbs without any external argument, yet governing internal accusatives (next to other morphological cases). Since Marantz does not show how such cases are to be accounted for in his theory, we shall not pursue his solution any further.

As for the present status of BG within the generative camp, Burzio himself (Burzio 2000) makes a clear move away from the Minimalist Program (Chomsky 1995). Government and Binding was the background to BG (Burzio 1993). Instead of advocating the Minimalist position, Burzio seeks a rapprochement with optimality theory (see recently Legendre et al. 2001). In the Minimalist framework, Case-less arguments acquire Case through movement; the association between Cases and arguments is, as Burzio puts it, "the by-product of a complex syntactic derivation" (Burzio 2000:235). Instead of the position advocated in the Minimalist program, that movement is required to get Case, Burzio argues for the position that the real motivation for movement lies in EPP and in the existence of an empty subject slot which comes with an unassociated Case. An object moving to the vacant subject position brings its Case along; the resulting violation of the principle of Case-uniqueness is corrected by suppression of one of the conflicting Cases. The suppression yields BG in accusative languages, and "Marantz's Generalization" (in Peeter's terminology; Peeters 2002) in ergative languages. EPP, Case-uniqueness, and grammatical relation consistency of Case" – viz. there being one specific Case for each specific grammatical relation (e.g. subject, object, goal, possessor, etc.) and vice-versa – are ranked constraints which interact with each another. The presence of an intricate pattern of constraint interaction may appear to corroborate the viability of an OT approach in syntax.

The present article follows a totally different route of explanation. It also takes as a point of departure that BG is an epiphenomenon. However, instead of seeking the solution in a reformulation of structural criteria, it is claimed that at the bottom of unaccusativity and BG is phrasal aspectual, or Aktionsart, perfectivity. This claim is expounded along the following sections. In Section 2, it will be demonstrated that no such division of two classes of intransitivity exists, at least in language that have aspectual morphology to identify perfective predicates. What do ergative predicates have to do with the definiteness property in existential sentences? Since the ergative hypothesis hinges crucially on VP-internal subjects, the tests relating to such VP-internal subjects are scrutinized in Section 3. In Section 4 the notions of aspect and Aktionsart *perfectivity* are introduced. It is demonstrated which empirical criteria of ergativity and perfectivity coincide. In Section 5 it is claimed on the basis of the previous results, that Unaccusativity in German is a unified semantic-syntactic category, based on one single common denominator for eV-tests. In Section 6, VP-internal subjects are put to the test: *there is/are* sentences are discussed, and refuted, as a valid test for ergative predicates. In Section 7 it is concluded that VP-internal subjects are simply discourse-motivated subjects. In Section 8 'phrasal ergatives' are taken up, and it is concluded that 'unaccusative/ergative predicate' is simply a misnomer based on observational inadequacy. Section 9 focuses on the paradoxical nature of BG in German: if perfectivity is at the bottom of BG, then BG cannot explain why there is no ergative transitive verb – something that falls out automatically under the perfectivity account. Section 10 summarizes the main points of the perfectivity account: the perfect fit of the 'perfectivity account' in terms of theta role distribution in the syntactic domain where aspect or Aktionsart is merged. The main conclusion in Section 10 is that, at least for languages that identify perfectives morphologically, the notion of 'ergativity' needs to be replaced by the traditional notion of 'perfective intransitives'.

2.   The (in)transitivity division

With respect to transitivity, traditional grammars tell us that there is only one dichotomy: transitive and intransitive predicates. Since Perlmutter (1978), Perlmutter/Postal (1984) and Burzio (1986/1993), the linguistic community has believed in a third class: 'ergative' predicates. In their one-place argument grid 'ergatives' identify the subject with properties of the internal structural ar-

gument, i.e. the direct object, which raises according to a very widespread, if not universal tendency to assign external arguments (i.e. subjects).

The present paper disputes the existence of this third transitivity distinction. It is claimed that, at least in German (and Dutch, although this is not illustrated in comparable detail), the distinctive properties of 'ergativity' are covered without exception by perfectivity ('boundedness'). In this respect, the 'Perfectivity Account' is on a par with Burzio's Hypothesis. Burzio's Hypothesis has nothing to say about transitive predicates. However, since perfectivity also covers transitive predicates and since there exist close lexical relationships between a large number of perfective transitive-intransitive pairs of predicates, the perfectivity account must be rated superior.

Burzio's Hypothesis (Burzio 1986), as opposed to the Perfectivity account (Abraham 1987, 2001), about VP-internal subjects states, in terms as succinct as possible, that 'ergative' (or 'unaccusative') predicates (eV) do not project external (as opposed to internal) subjects.

(3)   a. $\neg ACC_{structural} \leftrightarrow \neg \Theta_{external}$

This is what (3a) boils down to: If there is no structural internal ('direct') object, then no external theta role (semantic valency) can be assigned, and vice versa (by equivalence; see Reuland 2001: 'Introduction'), somewhat modified here.[2] In line with the explanatory components, let us call this the 'theta role-case link account'. In one reading following directly from (1a), agentivity on the external argument and the internal argument status ('direct object') can be related in the following way:

(3)   b. $\neg AG \leftrightarrow \neg DO$

The present article has a twofold goal: first, Burzio's account is taken issue with on empirical grounds; and, second, one of the tests regarded to be one of the empirical pillars in Burzio's line of argumentation, is refuted as empirically inadequate. Since perfectivity can be shown to be at the bottom of 'ergative' verbs in German and Dutch and since empirical tests based on the behavior of existential sentences with VP-internal subjects have nothing to do with 'ergativity' ('unaccusativity'), the 'Perfectivity account' is an equal competitor to Burzio's Hypothesis, at least. Ever since Haider (1984) and Abraham (1987),[3] the notion of what 'unaccusatives' or 'ergatives' verbs are in German has been clear: viz. *einschlafen, ausblühen, abfallen, umfallen, abfahren, sterben* "fall asleep, wilt, fall off, fall over, depart, die". I will not quote ergative illustrations from the English literature, since there is no such congruent classification, the notion of a covert internal subject status not being traceable directly on the morphol-

ogy of the predicates in question. Nor is there a clear semantic criterion for identification. What plays the determining role, however, are characteristics of distributional behavior. Quite plausibly, tests that confirm the VP-internal status of the only argument figure most prominently in determining whether or not some one-place verb is 'ergative'. Hence, existential clauses appear to be an ideal testing ground.

3.   What do ergative predicates have to do with the definiteness property in existential sentences?

Let us look at illustrations traditionally taken to identify ergative predicates ('eV'). See (4a–c), taken to illustrate the 'Definiteness Effect' – i.e. the inability of 'strong' NP to show up in existential sentences, and compare with (5a–d), the eV-identifying existential sentences (cf. Runner 1993; Philippi 1999: 72). The definiteness/quantificational/strong-identification test in (4a–c) below is supposed to distinguish by way of distribution definite/specific/thematic/count/ quantificational/'strong' from indefinite/unspecific/ rhematic/non-count/non-quantifying/'weak' nominal phrases ((4c) from Aissen 1975: 2; cf. Hoekstra & Mulder 1990: 56f.):

(4) a. There is/are *a/some/many/few/three* dog(s) in the garden.   . . . weak
     b. *There is/are *the/all/most/both/every* dog(s) in the garden.   . . . strong
     c. Suddenly there ran out of the woods *the* man we had seen at the picnic.   . . . strong

(4a, b) are called 'existential' clauses, (4c) is 'presentational' (Milsark 1974).

Ergative-identification test   – *appear*=e(rgative)V, *run*=i(ntransitive)V (or 'unergative') V:

(5) a. There *appeared* a/some/many/few/three dog(s) in the garden.   . . . eV
     b. *There *appeared* the/all/most/both/every dog(s) in the garden.   . . . eV
     c. *There *ran* a/some/many/few/three dog(s) in the garden.   . . . iV
     d. *There *ran* the/all/most/both/every dog(s) in the garden.   . . . iV

(5a–d) shows that only eVs allow for weak existential or presentational clauses as in (5a). In Chomsky's Minimalism the constraint expressed in (5a–d) translates as follows: eVs are not able to assign (structural) accusative case[4] because eV have no active AgrOP projection. If only unaccusative verbs are allowed in English existential sentences, according to (5a–d), and unaccusatives generally

lack the projection of AgrOP, one must conclude that existential sentences lack an AgrOP projection. How does this link to the definiteness effects shown in (4) above?

The 'Mapping Hypothesis' (Diesing 1992) appears to render an account for Burzio's Hypothesis and the constraints illustrated by (5a–d). Definite (or specific or strong, i.e. quantifying) object NPs, as in (5b, d) have to move outside of VP to land in the 'thematic domain' (possibly identical to Heim's 'restrictive clause'). If they have to move to Spec, AgrOP at least at the level of LF (but this position is not available in sentences with eV), only indefinite (or 'weak', non-specific, non-quantifying) NPs are able to show up in existential sentences, because indefinite NPs stay inside of VP in the first place.

(4c) seems to contradict Diesing's Mapping prediction, since *the man we had seen at the picnic* does not appear to the left of VP. I will simply assume here that the heavy subject phrase is extraposed because of constituent-heaviness. This particular restriction is a parsing phenomenon relating to Behaghel's *Gesetz der schweren Glieder* ('Law of heavy clause constituents'; Behaghel 1923). It will not affect our conclusions about the status of presentational distributions in relation to 'ergative' predicates.[5]

While this line of argument in terms of the Mapping Hypothesis may yield elegant support to Burzio's 'object-as-subject account', note that nevertheless several issues remain unsolved. The explanation just forwarded leaves totally open the question why (4b) is ungrammatical. Does this mean that forces other than the Ergative Hypothesis are at work? On the basis of a fresh look at cases such as (4)–(5), I will argue that the conclusions drawn above are not valid and that the 'eV-as-perfectives' account yields an empirically and theoretically better explanation of 'ergativity' in the Indo-European languages.

4. Toward an answer: The questions to be asked – and first answers: Aspect and Aktionsart perfectivity

On the basis of the insights in Section 3, the following questions need to be asked and answered. See (6a–c).

(6) a. Why are the German examples equivalent to (5b, c, d) good, as opposed to their English counterparts? Viz. (7) below.
    b. Why is the progressive equivalent of (5c) grammatical in English? Viz. (8) below.

     c.   Why is there a difference in German between a Locative-Dᴀᴛ vs. a Directional bounding-Aᴄᴄᴜsᴀᴛɪᴠᴇ? Viz. (9) vs. (10).

(7) *Es   rannten 5 Hunde im   Garten herum.*
      ᴇxᴘʟ ran.ᴘʟ 5 dogs   in-the garden around

(8) *There is/are 5 dogs running in the garden*
     vs. (3c) **There ran a/some/many/few/three dog(s) in the garden.*

(9) *Es   rannten die Hunde in   den-ᴀᴄᴄ Garten herein*
      ᴇxᴘʟ ran   the dogs into the   garden into

(10)$^{??/*}$*Es   rannten die Hunde im-ᴅᴀᴛ Garten (herum)*
      ᴇxᴘʟ ran   the dogs in the   garden (around)

Once the standard illustrations for Burzio's Hypothesis are extended by the questions in (6a–c) above – hence, if the empirical basis for Burzio's Hypothesis is extended essentially –, I claim that this account of ergative behavior cannot be maintained any longer and needs to be replaced by the claim that ergativity, in Nominative-Accusative languages like the Indo-European ones, is not accounted for in terms of 'object-as-subject', but in terms of perfectivity.

    Let us address question (6a) above. Note, first, that the alleged eV-constructions in the present tense are synonymous to their Present Perfect variants, as opposed to the iV-constructions, where the change of tense yields different readings. Compare (11)–(12) with (3a, c) above.

(11) 5 dogs have *appeared = appear* in the garden   …eV

(12) 5 dogs *have run ≠ run* in the garden   …iV

This is accounted for if *appear* is recognized as a perfective verb as opposed to *run*. With perfective verbs, the present perfect implies the present tense by referring to the beginning of the event related in the perfective tense. In Reichenbach's notation, in the perfect tense of perfectives, S and E are simultaneous as well as in an precedence relation, contrary to the simple past, where S is not simultaneous with E at any reference point.

(13) a.   E, S_1 S_n *having appeared*: E/S_{1-n}(x has appeared)
         |>>>>>>>|----------|
     b.   E S_1 *appearing*: E/S_1(x appears)

The two readings in (13a, b) intersect in S_1, much in contrast to (14a, b).

(14) a.   E S_n *ran:* E/S_1 (x runs)
         |~~~~~~~~~~~|
     b.   E S_1 *runs:* E/S_n (x ran)

From (14a, b) follows that *appears* and *runs* at least are different with respect to aspect. I will claim later that this is at the bottom of ergativity in the European languages of Indo-European origin and that it is only in aspectless English that this fundamental distinction does not bear out, as opposed to languages such as German and Dutch.

Let us take up (6b) above: Given that (3b, c) is good if the predicate *run* is changed to *is/are running*, then the observation valid for German can only be explained if German present tense collapses the progressive with the habitual reading, which is kept distinct in English. In other words, the German grammatical correspondence to (3b) is grammatical only under the progressive reading. Can we show this in distributional terms? Our conclusion seems to be supported by (15a) with stage-adverbial *gerade* "that very moment".

(15) a. Es   rennen gerade   5 Hunde im   Garten
          EXPL run   just now 5 dogs   in the garden
      b. There are 5 dogs running in the garden
      c. *There run 5 dogs in the garden   (∼(5c))

However, this argument is not very strong in German. Notice that any habitual-inferring adverb (*jeden Tag*) likewise allows for an acceptable reading.

(15) d. Es   rennen jeden Tag 5 Hunde im   Garten.
          EXPL run   every day 5 dogs   in the garden

What we can say, however, is that such *Es*-clauses never render the reading where *running in the garden* is characteristic of the 5 dogs. What is excluded, then, is the essential reading of (15d), and what remains intact is the stage reading. Hence, the distinction observed in English in terms of infinitive vs. progressive form is an inherently lexical property in German. Such differences between English and Dutch seem to hold quite generally as van Gelderen (2004) has observed (van Gelderen's conclusion extends to German; see Abraham 2001).

Now as to (6c) above: The difference between the two German sentences, (7)–(9), is vital and telling for our problem in that they have distinct distributions in ergative characteristics: the attribute test as well as the auxiliary test. Viz. (16).

attribute test for eV:

(16) a. die in   den-ACC Garten (hinein)gerannten 5 Hunde
          the into the   garden (into)run   dogs

    b. *die im-DAT Garten (herum)gerannten 5 Hunde
       the in the   garden (around)run   dogs

auxiliary test for eV:

(17) a. Die 5 Hunde sind in   den-ACC Garten (hinein)gerannt.
      the 5 dogs are   into the   garden (into)run
    b. Die 5 Hunde haben/sind im Garten   (herum)gerannt.
      the 5 dogs   have/are   into the garden (around)run

The auxiliary *haben* in (17b) is not common across all the German speaking areas, but where it is, it is sometimes the only option, particularly in the north, whereas *haben* is absolutely out in (17a) in all German speaking variants. The same holds for Dutch irrespective of substandard restrictions and areal distributions.

Dutch:

(18) a. De vijf honden zijn/*hebben de tuin ingelopen.   ∼(17a)
    b. De vijf honden *zijn/hebben in de tuin (rond)gelopen.   ∼(17b)

A solid conclusion for all Indo-European languages drawn from observations in (17)–(18) is that predicates and constructions of the (a)-type are perfectives. If, further, predicates of the *appear*-type – eV on all counts of the literature on ergative/unaccusative verbs – have the same distribution as perfective constructions as (14a) and (15a), eV and perfectives must at least have something in common. To make the conclusion that eV ARE in fact perfectives, one common denominator must be found for all tests and distributional characteristics of the 'perfective' solution to ergative predicates, including the two characteristics in (17)–(18).

5.   Unaccusativity in German: A unified semantic-syntactic category (common denominator for eV-tests)

The following diagnostic tests for unaccusative predicates, suggested by Haider (1984) and partly by Hoekstra and Mulder (1990) (to the extent that Dutch displays morphological evidence as amply as German), form a solid heuristic basis.[6]

(19) a. nominal attributability: *der *(ein)geschlafene Junge*
                                        the in-slept boy
                                        "the boy that fell asleep"
      b. *be*-participle:[7] *ist/*hat eingeschlafen* vs. *hat/*ist geschlafen*
                                        is/has in slept vs. has/is slept
                                        "has fallen asleep" vs. "has slept"
      c. agent nominals: *Schläfer* vs. **Einschläfer*
                                        sleeper vs. in-sleeper
      d. impersonal passive: *es wurde von allen gerannt/*angekommen*
                                        it was by all run/arrived
                                        "there is running by everyone"
      e. impersonal stative passive: **es ist gelaufen/*<ein>geschlafen*
                                        it is run /it is (in)slept

All of these diagnostic properties for unaccusativity can uniquely be seen to hide behind qualities of the passive perfect participle, at least in a language that makes overt auxiliary distinctions on the basis of perfectivity/resultativity. Thus, *sein=be* as an Aux for the past participle predication can only be assigned if the lexical participle is resultative; otherwise it needs to be *haben=have* in German (as well as Dutch and Yiddish). This covers the diagnostic in (19b). Now, it is crucial to see that the rest simply follows from this directly: attributive preterit participles can only be used if they are resultative states, i.e. if they are *be*-predicates. They cannot be *have*-participles, which usually are durative intransitives. This takes care of criteria (19a, c). Notice, moreover, that resultative participles need not be *passive* participles. Criterion (19d) follows from the fact that *be*-past participles cannot be bearers of agentive subjecthood and that, as adjectives, they cannot bear external arguments in the first place. Since passivity in German is contingent upon agentivity ('only agentive predicates passivize') (19d) is derivable from the adjectivehood and therefore from the Aux *be* going with resultative participles. The stative impersonal passive, (19e), yields no acceptable form under any circumstance for the simple reason that no argument role is assigned after the demotion/absorption of the base subject of the active one-place intransitive in the first place. Stative BE-participles, however, are adjectival and require a non-agentive theta role to satisfy their syntactic and semantic valence grid. The bottom line of these diagnostics is that unaccusatives in German are perfectives or resultatives semantically and participles (in a small variety also adjectives; see Cinque 1990; different in Abraham 1987, 1993, 1995) formally. As a consequence, it is patently false to

speak about unaccusatives or ergatives in their finite or non-finite form. All we can identify as unaccusatives are a well-defined class of past participles (and, marginally, adjectives). It has been argued along the lines that the semantics of resultativity has a direct and unique syntactic reflex as a secondary predicate (small clause with verbal particles, affixoids as well as complex directional adverbials as small clause BE-predicates;[10] Abraham 1993, 1995, 2000a, b).

This insight on ergativity based on as single language is in itself supported by the type of languages that are case- and function-ergative only in the past or perfective (split ergative languages such as Hindi, Urdu and Balochi; see Abraham 2000a). Split-ergative case languages follow the nominative-accusative typology in the non-past tenses or non-perfective aspects, while projecting the absolutive-ergative pattern in the past or perfective. This supports the single-language based derivative character of unaccusativity, developed above. Under an UG perspective it would be wrong to disregard such typological aspects of ergativity.

6.   'There is/are' as an alleged test for ergative predicates

How does the *There is/are*-ergativity test fare with respect to the two competing theses? At first sight, everything appears to speak in favor of Burzio's Hypothesis: According to (5) above, existential clauses do not project AgrOP; therefore, both referentially definite/strong objects, which have to move out of VP to check their structural object case in AgrOP before spell out, and referentially indefinite/weak objects, which stay inside VP and therefore are assigned an accusative lexically, are blocked from any possible UG-grammatical structure. Only with unaccusative predicates, which assign no structural subject position in the first place, but which do provide a derived subject position and where, as a consequence, no object exists as a derived position, can there be an existential sentence with a subject. This seems a convincing line of argument in Burzio's terms and Minimalism.

Notice, however, that the very observation that there be no structural object accusative position in existential sentences is not generalizable. German does have such transitive existentials (see Boeckx 2001).

(20)   Es stieß   <*heute> ihn   <heute> der Soldat   <heute>
       it pushes today   him-ACC today   the soldier-NOM today
       von der Brücke
       off   the bridge

From this the conclusion needs to be drawn that existentials do in fact have a position for structural accusative objects. I leave open at this point the question whether this is necessarily a Minimalist assumption in terms of AgrOP – i.e. a functional node above VP. Furthermore, there is legitimate doubt that (5c, d) – i.e. unergative predicates – cannot be accommodated in such existential clauses even in English. See (21).

(21)   a.   Here comes Harry.
       b.   There goes Swifty, as the dogs go out. (from a dog race)

There may be distinctions between demonstratives and definite articles, although neither appears to be totally out. See (19).

(22)   There were those/#the neighbors at the City Council meeting yesterday.
(Ward & Birner 1995)

In French, no doubt as much SVO as English, although, unlike English, with structural space for clitics before the finite verb, such examples can easily be provided as well (from Lambrecht 2001). Notice that *Y'a* "es hat/there is" opens an all-rhematic (thetic) clause: in other words, something we would want to place inside Heim's nucleus sentence or within VP, according to the topological distribution suggested in (23).

(23)   a.   Il y a le monsieur du service qu'a téléphoné.
            It is the maintainance guy who called / Der PORTIER hat angerufen
       b.   Il y'a lui qu'a téléphoné.
            It is the he who called / ER hat angerufen

The clefts in French are taken up by simple, economical scrambling operations with refocusing in German (caps).

7.   Theoretical aporia

Consider again the account for Burzio's Hypothesis on the basis of Diesing's 'Mapping Hypothesis' (Diesing 1992) in connection with the constraints in (5a–d) above. Consider existential *there*-clauses with ergative predicates as (5a, b) above. The first question to be asked is how the VP-internal subjects get their nominative case assigned. Obviously, this must happen by default, because there is no movement out of VP. But is the nominative really the default case in English? Is it not the accusative as in *it is me/him*? A more

principled question with respect to German transitive existential clauses as in (5) above is whether a definite accusative such as the thematic pronoun *ihn* "him" can stay within VP, where it cannot be assigned case. A way out would be that it moves to some AgrOP only at LF, but not on SS. Notice that, according to the adverb placement, *gerade* in (15a), the subject might have moved outside of VP. With 'ergative' verbs, however, there is no AgrOP available. All that remains is AgrSP for checking the subject. According to common assumption, however, *there* is in the position of the subject, AgrSP. So what remains for a Minimalist explanation of 'ergative' verbs in existential clauses?

Furthermore, if the observations in (5a, b) are generalizable, the only conclusion to be drawn is that there are two types of structures to be assigned for definite/strong and indefinite/weak existential constructions. Let us look at German equivalents of (5a, b), i.e. (24a, b).

(24) a. Es ist/sind$_i$ [$_{VP}$ ein/viele/einige/fünf Hund(e) im Garten t$_i$]
          EXPL is/are a/many/some/five dog(s) in the garden
      b. Es ist/sind$_i$ der/jeder/alle Hund(e)$_j$ [$_{VP}$ t$_j$ im Garten t$_i$]
          EXPL is/are the/every/all dog(s) in the garden

The accent distribution in (24b) is identical to that in (24a), meaning that no scrambling process has taken place. In other words, since no refocusing took place, no movement occurred into the middle field open in principle for scrambling. To understand the present approach it is essential to understand that presentational (or 'existential') sentences are all rhematic ('thetic'). In accordance with Diesing's 'Mapping Hypothesis' (based on Heim's partition of a 'restrictive clause' and the 'nuclear scope'), the VP marks the syntactic range of the nuclear scope and the rhema/new, while the 'restrictive clause' attracts all functional categories above VP, i.e. anything between AgrOP and CP (Meinunger 1993; Runner 1993; Abraham 1995).

> ['THEMA/RHEMA' in the 3rd column means that topicalized clausal members can be in both discourse functions simultaneously.]

(25)   Field topology: UG-structure and the distribution of discourse categories

		THEMA or RHEMA	–	THEMA	–	⟸RHEMA	RHEMA⟹	THEMA
	Coord	[$_{\text{CP/IP}}$ SpecCP/IP	Comp/ Infl	AgrOP [+def]	[$_{\text{VP}}$	[$_{\text{VP}}$AgrOP [–def]	V°]]]	Extra-position
I	–	*Du* You	*kommst* come	–	*aber* but-MOD.PART.	NACHHAUSE home	t	*heute!* today
Ii	*Aber* But	–	–	–	*pünktlich* on time	–	KOMMEN! come	–
Iii	–	*Wieso* Why	–	–	*denn* then-MOD.PART.	PÜNKTLICH on time	kommen? come	–
Iv	*Aber* But	*wieso* why	–	–	*denn* then-MOD.PART.	PÜNKTLICH on time	kommen come	*heute?* today

The default domain for pronouns and their clitic forms is indicated by default accent – i.e., accent distribution which (in the sense of Höhle 1982) triggers the fewest presuppositions, which simultaneously means that this default accent goes with the largest possible set of contextual links. See (26) for characteristics of typical fillers of the TH-slot:

(26)   Categorially determined definiteness (pronouns and their clitically weakened forms) as well as definite NPs scramble out of VP, where they picked up case. This implies:

  a.   unaccented and cliticized pronouns are inherently thematic;

  b.   consequently, the default position of unaccented and cliticized pronouns is outside – i.e. to the left of – VP; see (27) below;

  c.   (clitic) pronouns cannot surface as rhematic elements unless they receive contrastive stress – in German with the exception of pronominal *es* "it", which never carries contrastive stress and, consequently, has to stay to the left of VP, i.e. in the thematic domain.

Furthermore, the following distributions hold between positions and accent distinctions (the abbreviation GA = "grammatical accent" in Cinque's (1993) 'Accent distributional Null Hypothesis' or 'Accent default linking rule'):

(27)   a.   Wir haben *sie* gestern GESEHEN   ...GA
              we have her yesterday seen
              "We saw her yesterday"

         b.   *Wir haben gestern *sie* gesehen   ...–

c. Wir haben gestern *SIE* gesehen   . . . CA
    "It was her that we saw yesterday"

d. *SIE* haben wir gestern gesehen   . . . CA
    "It was her that we saw yesterday"

e. *Sie haben wir gestern gesehen   . . . –

The ungrammatical versions – i.e. those without a GA/CA-appreciation – can be deduced directly from Cinque's GA-Linking-Rule. (28) shows versions of GA since the adverb is outside of VP and does not reach the structural depth required for the assignment of default stress.

(28) Field topology: Verbal bracket, discourse categories and the distribution of default accent (GA)

	THEMA/ RHEMA	–	⇐THEMA	THEMA⇒	⇐RHEMA	RHEMA	RHEMA⇒	THEMA	GA≠ CA
	Coord	[CP/IP Spec CP/IP	Cº/Iº	WP for (clitic) pronouns	AgrOP [+def]	[VP	[VP AgrOP [–def]	Vº]]]	Extra-position	
i	–	*Du* You	*wirst* will	*<ihn/'n>* him/him	–	*<heute>* today	*<Hasen>*	*sehen* see	*<heut>* today	GA
ii	*Aber* But	–	–	*'s 'm* it him	–	*auch* also	*pünktlich* on time	*ABGEBEN*! turn in		GA
iii	–	*Wieso* Why	–	*es ihm* it him	–	*denn* then	*pünktlich* on time	*ABGEBEN*? turn in		GA
iv	*Aber* But	*wieso* why	–	*'m 's* him it	–	*denn* then	*sofort* at once	*ZEIGEN* show	*heute?* today	GA

See the illustrations in (29) below accommodating both intransitive and transitive presentational sentences in German.

(29) a. Es übertölpelte$_i$ [VP prinzipiell [VP der IGEL den HASEN t$_i$]
          EXPL fooled generally   the hedgehog the hare

      b. Aber es übertölpeln$_i$ [VP jedesmal [VP IGEL HASEN t$_i$]
          but EXPL fooled each time   hedgehogs hares

(30) All-rhematic presentational/existential clauses:

	–	–	– –		⇐RHEMAᵢ	RHEMA	RHEMA	RHEMAᵢ⇒
	Coord	[CP SpecCP	C°	[IP SpecIP	Infl	[VP	[VP	V°]]]
(29a)	–	–	–	*Es*	*übertölpelte*ᵢ	prinzipiell	*der* IGEL *den* HASEN	tᵢ
				EXPL-*it*	fooled	always	the hedgehog	
							the hare	
(29b)	*Aber*	–	–	*es*	*übertölpeln*ᵢ	jedesmal	IGELHASEN	tᵢ
	But			EXPL-*it*	fooled	every time	hedgehogs hares	
	–	–	–	*There*	*appeared*	–	*some dogs in*	(position not
							the garden]	available)

Since presentational/existential sentences are fully rhematic, they reach no further than IP; no topic is projected in terms of a definite nominal – see expletive *es* in SpecIP. For sure, neither lexical subject nor lexical object NP moves out of VP. The verb retains its rhematic function on account of its pre-derivational base position with agreement and tense/mood assigned only as grammatical information.

Notice that only the latter assumption takes care of the direct object-accusative in presentational IP-clauses in German. We take English (5a, b) to be structurally alike. And since we concluded that (5c, d) are out for reasons that reside in the tense/mood domain, which cannot have anything to do with case assignment, presentational clauses, like (5a–d), form no distributional basis for Burzio's Hypothesis. More generally, one has to conclude that a Minimalistic account of Burzio's hypothesis is not well motivated for theoretical as well as empirical reasons. In particular, the *there is/are*-distribution does not attest to anything that might be called 'unaccusative' properties in Perlmutter/Postal's or Burzio's sense.

8. 'Unaccusative/ergative predicate': Simply a misnomer based on observational inadequacy?

We have shown that the distribution between eV and iV in existential/presentational sentences has nothing to do with Burzio's 'subject-VP-internality' supposedly holding for eV only. This became evident in examples from German, French, and, to all appearances, even from English. Since the class of eV are co-existential with perfectives in German and since the identification of perfective intransitives resides in a single property, namely resultative adjectivehood, which completely covers Burzio's 'VP-internal subjecthood', we may rightfully conclude that the perfectivity account is at least equivalent to Burzio's

'VP-internal subject' account. What makes the Perfectivity Account superior, however, is that it accommodates the behavior of all kinds of directionally bounded complex PPs and verbal affixoids without a single additional condition (Abraham 1993, 2001a). Burzio has nothing to say about either PP+V constituents (*in den Garten (hinein)springen* "into-the-garden-jump"), which comply with each of the perfectivity tests in (19). Furthermore, under the perfectivity account, but not on Burzio's Hypothesis, homonymic perfective tV and iV, such as in (31), must be related in a cause-bounded vs. cause-unbounded fashion, addressed in Section 9.

> (31) a.   in den   Graben **stürzen**   …[+perfective] iV
>   into the-ACC moat   drop
>   b.   jemanden   in   den   Graben **stürzen**   …[+perfective] tV
>   someone-ACC into the-ACC moat   drop   = CAUS (iV-*stürzen*)

I have argued elsewhere (Abraham 2000b) that if a language has no inflectional or derivative morphological paradigms signaling perfectivity vs. imperfectivity, identifications such as Burzio's Hypothesis may arise. English is such a language, not only because it possesses no derivative aspectual morphemes, but, what is probably more, because it does not split its auxiliaries into *have*-s and *be*-s. Under such a deficient paradigmatic morphology theories such as Burzio's may emerge – and may even be legitimate, because nothing in the distributional inventory of the language betrays links to derivative perfectivity. It should be clear that a phrasal account of BG cannot be incorporated in Burzio's theory – for the simple reason that there is no direct representation of such phrasal facts in (1)–(3) –, nor in Marantz' theory.

9.   The paradoxality of Burzio's Generalization in German

All we have said so far raises the following question: Is Burzio's Hypothesis subsumed by the Perfectivity Account, possibly for languages where aspect or Aktionsart is not represented morphologically? Or, in other words, what would be the missing link between a language that identifies verbal ergativity in Perlmutter's and Burzio's sense, on the one hand, and a language like German, on the other, which covers 'ergativity' phenomena in perfectivity terms? Or, in yet other words, what is "perfectivity minus 'ergativity'" in terms of typological characteristics?

Let us pursue these questions by investigating which types of empirical difficulties Burzio's claims lead us into, given the comparative evidence from

German. Two types of 'ergatives' are presented: lexicals (i.e. X^0-ones; with, as well as without, verbal particles), and phrasal (i.e. XP-) ones. See Hoekstra and Mulder (1990:5f., 8f.) for identical evidence in Dutch, which is a *have/be*-distinguishing language on the same aspectual basis as German.

(32) a. *sterben-**ist** gestorben* "die-is died"   . . . X^0-lexical
      b. *absinken-**ist** abgesunken* "downsink-is downsunk"   . . . particle verb
      c. *in den Graben fallen – **ist** in den Graben gefallen*   . . . PP+V
          "into the ditch fall – is into the ditch fallen"
      d. iV-*stürzen* in relation to tV-*stürzen*   . . . tV= CAUS (iV-*stürzen*)

It will be argued that the latter, phrasal, evidence alone suffices to cast serious doubt upon Burzio's claim (henceforth 'Burzio/Perlmutter's paradox'). To the extent that the diagnostic characteristics demonstrated on German in (19) above hold for Italian as well, Burzio's syntactic claims follow unambiguously from the Aspect Account. Recall that the Italian evidence provided by the *ne*-phenomenon has been recognized as special and may not bear on ergativity in the first place. It is this relation between the one-place, intransitive perfective *stürzen* and the homonymic transitive perfective *stürzen,* as in (32d), that has been overlooked in the literature on unaccusatives/ergatives so far. See Note 7.

It is no doubt striking that the German examples of eV are characterized by verbal prefigation, as opposed to the simple verbal lexicals for iV: German (as well as Dutch and Frisian) 'ergative' predicates appear to be classifiable as perfectives. This has led to the early assumption (Abraham 1987) that there is a deep, but yet unexplained connection between the perfective Aktionsart and the type of syntactic ergativity described e.g. in Dixon (1994) and elsewhere. What precisely is the claim made in connection with 'unaccusativity'?

Observations such as those in (19a–e) have led linguists such as Perlmutter (1976) and Burzio (1986) to make the following two main generalizations. Cf. (33a–b).

(33) a. 'Unaccusative Hypothesis' (Perlmutter 1978, to demonstrate the explanatory force of Relational Grammar): there is a universal class of intransitive verbs whose lexically designated subjects exhibit properties of a direct object. On some covert level of representation, this should turn out as:

for Italian SVO (left-branching):   for German SOV (right-branching):

```
        CP                              IP
       /  \                            /  \
   SpecCP   TP                     AgrSP    VP
           /  \                    /  \    /  \
        Spec    VP              Spec    V Spec   V
         |     /  \              |
        ne  Spec   t            es
                                SUBJ
            SUBJ
```
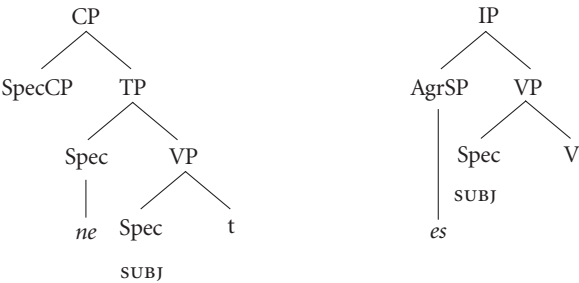
b.   'Burzio's Generalization' (i): "A verb which lacks an external argu-
     ment fails to assign accusative case" (Burzio 1986:178f.; no doubt,
     to be constrained further, in modern terms; otherwise, i.e., if not so
     constrained, German subjectless impersonals, with accusative object-
     EXPERIENCERS, would be straightforward counter-examples triv-
     ially invalidating this generalization. See Note 2.

c.   'Burzio's Generalization' (ii): "A verb which fails to assign accusative
     case fails to theta-mark its external argument" (Burzio 1986:184; fol-
     lowing from case theory). Cf. (1)–(3).

We have argued that the syntactic characterization of unaccusatives in Burzio's
fashion is too simple. It does not do justice to a wide array of empirical lin-
guistic facts that have to be included and accounted for in a general approach.
We opted for a descriptive format including semantic and aspectual properties
(telicity, change of state, the question of an agentive reading). Unless these em-
pirical facts are included, the further distinction between eV and iV in terms of
(34a, b) below is beside the point.

(34)   a.   subjects originate within a (single) VP
       b.   vacuous branching is disallowed. See (34c) vs. (34d) below well as
            Chomsky's solution (Chomsky 1995) in (34e).

```
       c.   VP      d.     VP        e.       V
           /  \           /  \               /  \
         NP    V'       NP    V'           NP    V
                |            /  \
                V          NP    V
```
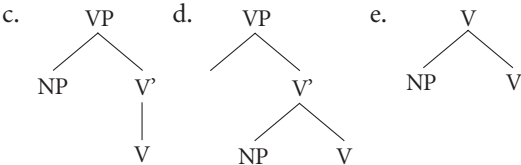
Such indiscernibility in formal terms lends further support to our analysis of
the aspectual pair *schlafen/einschlafen* "sleep-fall asleep". For perfective *ein-
schlafen*, but not for durative *schlafen,* I assume a small clause syntactically
projecting a change of the predicate event and a resulting state. This solu-

tion needs to be expressed more fully in formal terms for different types of predicates (cf. Abraham 2000a).

It has to be kept in mind that the designation of the lexical subject of eV in terms of objects (such as in the form of (33a) for an SOV-language like German, where the basic (lexically designated) subject position is unoccupied) does not preclude its surface appearance as a subject, due to a universal tendency to avoid subjectless clauses (Extended Projection Principle; Chomsky 1981). [θ_i = VP-internal theta role; [θ_e = VP-external theta role].

(35)   a.   eV=intransitive perfective: __[θ_i eV] (vs. tV: θ_e[θ_i tV]), where θ_i of eV surfaces eventually as subject due to EPP; cf. eV θ_i-*stirbt* 'θ_I-dies'
       b.   iV: θ_e[iV], where: θ_e and θ_i for lexically designated subject (external) argument and object (internal) argument, respectively; cf. θ_e-*läuft* 'θ_e-runs'.

If there is a nominative (unmarked case, default case) in contrast to other case morphology, it is the nominative that will identify the subject. Since infinitives generally disallow subjects or nominatives to surface, one assumes that the nominative is assigned by some clausal function(al category) such as TENSE (or MOOD) of the clausal finite predicate (C/T or C/M), whereas all other case is verbally governed (C/V), either structurally or lexically inherent.

The two generalizations in (35a, b) have a number of principal consequences of a theoretical and a typological nature. The most prominent theoretical question is what Aktionsart/aspect, or, more precisely, the perfect tense, has to do with the syntactic class of eV ('unaccusative' verbs as opposed to iV). Likewise, the important typological question is whether it is true that the ergative system has a strong affinity with perfect(ive)s and what the deeper nature of this connection is. Note that a number of other links established in the literature follow immediately from the syntactic property of direct object of the ergative subject, such as its role of PATIENT or THEME (i.e. NON-AGENTIVITY) as well as, at least in SOV, VP-internality of the subject. The latter distribution is linked clearly to non-referential specificity. Recall (25) and (28). The underlying distinction between unergativity and unaccusativity solely in terms of the structural distribution of theta roles and (L-related) argument and argument position, as in (3a–b), leads us into a dramatic impasse, since we do not know what the perfective equivalent of the one-place perfective 'unaccusative' and the two-place, transitive perfective should be. If we accept one-place ergatives as in (36a, b), then the aspectual account would force us to speak of 'transitive ergatives' also – which would lead to non-interpretable structures (as in the right box under (36b) below). Question marks indicate

difficulties of categorial identification in the derived structures. The tripartite option in (34a–c) cannot be decided by the unidentified relation between perfective tV and iV ('eV').

(36) Burzio/Perlmutter's assumptions lead to an uninterpretable structure:

	[aPERF]	PERLMUTTER/BURZIO:	DEMOTION OF EXTERNAL ARGUMENT:
(a)	–	iV: θ_e[___]	tV: θ_e[$_{VP}$ θ_i $V_{1+2?}$]
(b)	+	eV: ___[$\theta_{i\_}$]	tV: _ [$_?$ θ_e [$_?$ θ_i $V_{1?}$] $V_{2?}$]]

Recall (32a–d), showing that perfectivity is not restricted to one-place verbs, but includes transitives (θ_e[θ_i tV]; cf. (31b)) as well. Consider the right bottom section in the table in (36b) above. If the external argument, θ_e, is demoted by force of perfectivity, as between iV and eV in German, what would be the status of the perfective tV? To derive the perfective version of tV, the internal argument, θ_i, should be demoted. But it is totally unclear as to what this should yield in structural terms. To be sure, we do know what the 'demotion' (if indeed this is what is going on) should yield empirically, i.e., a stative/adjectival passive. But what does this passive have to do with the structural theta role distribution in the perfective tV in (36b)? I suggest that this is indeed the required structure and that the question marks are resolved in terms of a small clause structure for the internal bracketing and distinct components of the prefix verb (V_1 for the 'unaccusativizing', since perfectivizing verbal prefix, V_2 for the simple, non-perfective verbal component). We would like to arrive at a solution where the fact that the internal argument, θ_i, has subject properties is counted for. The characteristic responding to this requirement is the logical subject status of θ_i in the embedded small clause predicated of a stative property.

10. The perfect fit of the 'Perfectivity Account' in terms of theta role distribution

In Section 9 we have shown that, if the relations in (32a–d) are to be included in any account of 'ergativity', Burzio's simple VP-internal parameter yields no empirically sound result. Instead, we suggested the Perfectivity Account on the basis of object predication.

Let us now return to the beginning of our discussion. If, according to Burzio's assumption in (1), $\neg ACC_{structural} \leftrightarrow \neg T_{external}$ or, in different terms of all-clause parts, $\neg AG \leftrightarrow \neg DO$ generalizes over theta role linking to clausal parts. If the "Perfective Account" is at the bottom of his thesis, then we will

have to show that, indeed, the perfective event structure assigns semantic theta-roles in such a way that (1)–(3) are satisfied. This is borne out in (37) below. In (37a), the perfect participle of the perfective tV assigns the patient role of the direct object as the only argument, in contrast to the imperfective tV in (37b). The mapping relation between θ-role and argument is crucial: in perfective/resultative preterit participles selecting *sein/be* only the direct object gets assigned, counter to the preceding phase of the event, satisfied by both arguments.

(37) Perfective vs. imperfective event structures and the structural distribution of θ-roles (⇒..."implies"):

SU, DO   DO

a. perfective tV |>>>>>>>|------------|

   cf. *HINEINschieben*: PAT

     $AG_j[t_j$ [$_{SC}$ PAT *EIN-*] *schieben*] {PAT(AG)}

     schob hinein ⇒   *ist hineingeschoben* (*worden*)=stative participle/ adjectival

SU, DO

b. imperfective tV |∼∼∼∼∼∼∼∼∼|

   cf. *schieben*:

     AG[PAT__]   {PAT (AG)}

     schob   ⇒ *ist geschoben* *(*worden*): eventive, never stative

SU_i^2 SU_i^1

c. perfective iV |>>>>>>>|------------|

   cf. *EINschlafen*: ='eV' __[PAT__]

     PAT $PAT_j[t_j$ [$_{sc}$ t_j *EIN-*] *schlafen*]

     schläft ein ⇒ *ist*/**hat eingeschlafen* = stative participle/adjectival

SU

d. imperfective iV |∼∼∼∼∼∼∼∼∼|

   cf. *schlafen*: PAT[__]

     PAT   PAT

     schlief   ⇒ *hat*/*ist geschlafen: eventive, never stative

With perfective iV ('eV'), as in (37c, d), the subject, Su_i^2, must actually derive from an argument that has a basic direct-object function, in accordance with (37a). Since there is only one argument, $SU^2=SU^1$, SU^2 in the event phase preceding the result phase must be derived from SU^1.

The crucial insight following from (37a–d) is twofold:

(38)   The resultative phase, |- - - -|, standing for the adjectival participle resulting from the preceding incremental 'approach phase, |>>>|, assigns only the internal theta role – which can never be an AGENT.

(39)   The resultative event selects only *sein*, never *haben*. *sein* is typically selected by adjectives, which in turn never assign the AGENT role.

This yields the final keystone in our argument. The perfectivity account derives Burzio's subject-VP-internal relation in (1) unambiguously and without leaving any issue unaccounted for.

11.   Conclusion

This paper has advocated a lexico-syntactic hypothesis for lexical ergativity replacing BG for languages such as German and Dutch. It is based on the following far-reaching implications – far-reaching, possibly, for generative linguistics itself. Both are immediate consequences of the broader thesis. One implication is that ergativity, as defined in the generative literature, is not only lexical (as has been generally assumed) but also phrasal; this empirical finding, if taken on board, is certain to have a dramatic impact on prevailing theoretical assumptions. Secondly, the perfectivity thesis has lead us to posit, quite naturally in terms of event semantics, that agents can never be internal arguments. Before this paper, nobody – or so it seems – has been in a position to explain this generalization, which remains unfalsified (Peeters 2002). While remaining by and large faithful to the generative cause, we think that this view at the same time breaks important new ground both theoretically and empirically – one that anyone with an interest in ergativity would be amiss to ignore.

We have argued that both forms of ergativity (and let me remind the reader that the former of these is also known as *unaccusativity*) are epiphenomena, as much as, or even more than, BG itself. The key notion, *perfectivity*, is semantic in nature (see, for a similar approach, Peeters, in preparation): although unaccusativity is a property of verbs, and ergativity a property of languages, both proceed from a common core (viz. the semantic notion of perfectivity), with analogical leveling in various directions accounting for differences between languages. The levelings appear sometimes to be quite massive. However, they are all logical implications explicable in syntactic-structural, and of course semantic, terms. More specifically, I have argued, syntactic behavior is typically

associated with (aspectual) perfectivity as well as with (lexical) telicity – an Aktionsart sometimes also referred to as "perfectivity". We have also shown where exactly the common explanans lies: in the event semantics. After all, both can ultimately be traced back to the single, universal tendency to conceptualize differently an event which has ended or has an inherent, but as yet not realized endpoint, and an event which has not ended or has no inherent endpoint.

Finally, I believe it is important to point out again the link that I have made apparent between generative theory, within the limits that it has been made use of in Abraham (2000a), and typology, both with respect to the notion of ergativity. I would like to argue (and I find myself supported in this view by Peeters 2002) that even non-generativists, provided they have an interest in ergativity, are likely to find aspects of the present stance helpful for their own work. Building on a view rightfully taken for granted by many, but fiercely opposed by typologists such as Dixon (1994), viz. that "syntactic" or "syntax-theoretic" ergativity as understood by Burzio, Marantz, Perlmutter and others is related to "typological" ergativity as defined by Dixon (1994) – for whom only the terminology is common –, it was argued here that both forms of ergativity (or *unaccusativity*) are epiphenomena, as much as, or even more than, BG itself. The key notion, *perfectivity*, is semantic in nature, but it finds a distinct structural correlation in generative syntax (eV as small clause structures vs. iV, or unergative V, without such a small clause syntax).

The final conclusion of this discussion is: (i) VP-internal subjects are discourse motivated (thetic) grammatical relations; under no circumstances can they unambiguously be identified as ergative/unaccusative arguments; (ii) ergative/unaccusative predicates are perfective/telic/"measured out"[11] intransitives; as such they are a subclass of perfective/telic/"measured out" verbs; nothing in terms of argument/theta distribution alone legitimizes the postulation of an ergative class except in languages that have no lexical aspectual identification such as Modern Standard English; (iii) from (i)–(ii) follows that "ergativity/unaccusativity" is not restricted to lexical phenomena; there are also "unaccusative" – i.e., perfective/ telic/"measured out" – verb complexes; the fact that the latter cannot be identified as "ergative" in Modern Standard English hinges upon the meager syntactic distributional diagnostics – recall the array of distributional identifiers for German in (7), (8)–(10), (15)–(19) as well as (31)–(32) above; (iv) the present discussion extends the notion of English-identified "ergativity/unaccusativity" to typologically cover a syntactic field which has traditionally been identified in terms of lexical aspect or Aktionsart in the histories of grammar writing other than those on Modern English.

Notes

1. The present article is a thoroughly reworked version of Abraham (2002). Despite consideration of new literature on the topic, above all Reuland (2000), the overall conclusion, however, has remained the same.

2. Neither Reuland nor Burzio speak about accusative of structural or non-structural status. Languages like German make necessary this distinction, however, since there are non-structural accusatives that make Burzio's Hypothesis too strong empirically and that therefore one would not want to include in Burzio's restriction. In German there are predicates without any subject which nevertheless assign accusatives: viz. *Mich schaudert-graust/Es schaudert-graust mich* 'Me(ACC) -shudders'/'it-shudders-me(ACC)' (compare obsolete *grue* as a verb); moreover, there are several different accusatives of non-structural qualification: cf. *Es dauerte einen Monat lang* 'it-lasted-one(ACC)-month(ACC)-long', which is an adverbial accusative of temporal duration, as well as *Es kostet dich dein Leben* 'it-costs-you (ACC)-your life(ACC), which is a verb-governed accusative, which is not structural, since the verb *kosten* cannot passivize. For further detailed arguments see Abraham (1987, 2000b).

3. For an exhaustive list of 'ergative' verbs in German, see Heilmann (1988) (MA thesis advised by H. Haider, University of Salzburg).

4. Adverbial accusatives would then have the status of adverbial adjuncts marked for accusative disqualifying for structural status.

5. Thanks to Line Mikkelsen, Santa Cruz, for drawing my attention to Aissen (1975).

6. Since none of (16) functions in any major way as a list of identificatory parameters for ergativity in English, the distributional property usually applied is postposition of the subject. This has been applied to German and Dutch also, clearly scrambling languages. Notice, however, that little in terms of convincing evidence can be achieved by scrambling between subject and object(s) in terms of marked vs. unmarked positions unless one considers clausal accent and its link to contextual fit. Thus, whether the subject is in base or in scrambled position in *daß dem Kind das Buch gefallen hat* or in *daß das Buch dem Kind gefallen hat* "that the child was pleased by the book" is hardly something that can be decided with an eye on a conclusion as to Burzio's ergativity. Notice that (19a–e) does not include any word order parameter. For German *gefallen* "please" and other such psych-verbs (see den Besten 1988/92 for German and Dutch; Belletti & Rizzi 1988 for English and Italian) the AUX-selection of *have* (vs. *be* in German and Dutch) alone is an 'ergative' disqualifier. It is at the very heart of our line of argument that VP-internality of subjects alone is not a token of ergativity, since this position can be motivated in several ways, which have nothing to do with Burzio's reasoning. See also Pesetsky (1995) for such a view, albeit based on different observations.

7. Hoekstra and Mulder (1990:11) take Dutch *zijn* "be" to be a suffucient condition for 'ergativity'. German *sein* "be" is necessary, but not sufficient. This lies at the bottom of the 'Perfectivity Account' which we claim replaces any sole assumption of VP-internality. Since only resultative participles are unambiguous 'ergatives', its event semantics is the real identifier of 'ergativity'.

8. Hoekstra and Mulder's condition of 'result SC formation' identifying 'unergatives' (Hoekstra & Mulder 1990:11) strikes one as beside the point and a misnomer; cf. their

supporting illustration: *dat Jan zijn schoenen scheef loopt*, German *daß Jan seine Schuhe schiefläuft* 'that-Jan-his-shoes-worn down-walks' "that J. walks his shoes worn on one side", where we have a transitive (rather than an 'unergative') construction with an embedded intransitive perfective *die Schuhe sind schief (gelaufen)* "the shoes are worn down (from walking)", which is 'ergative', or , better and in our terms, intransitive-perfective.

9. "measured out" (the term stems from Tenny, to all appearances) as an identifying predication of perfectivity is not a good descriptive characteristic since there are punctual perfectives, where measuring-out is difficult to identify.

References

Abraham, Werner (1987). "Burzio trifft Wulfila. Zu den distributionellen Eigenschaften von *wairðan*, "werden" und *wisan* "sein" im gotischen Passiv." *Groningen Papers in Theoretical and Applied Linguistics – TTT, 9*, 1–29. [revised version: "The emergence of the periphrastic passive in Gothic." *Leuvense Bijdragen, 81*(1–3), 1–15.]

Abraham, Werner (2000a). "The aspect-case typology correlation: perfectivity triggering (split) ergativity. Burzio's generalization explained." In E. Reuland (Ed.), *Arguments and case: explaining Burzio's Generalization* (pp. 129–190). Amsterdam: J. Benjamins. [Linguistics Today – Linguistik Aktuell 34]

Abraham, Werner (2000b). "Kern-oder Epiphänomenalität? 'Ergativverben' und Mittel-konstruktionen im Sprachenvergleich". In Andrzei Kátny (Ed.), *Aspektualität in germanischen und slawischen Sprachen* (pp. 35–62). Rzeszow.

Abraham, Werner (2001). "Modals: toward explaining the 'epistemic non-finiteness gap'." In Marga Reis & Reimar Müller (Eds.), *Studies in modality*. Opladen: Westdeutscher Verlag.

Abraham, Werner (2002). "(At least) Two types of unaccusativity – or non at all." In A. Wedel & H.-J. Busch (Eds.), *Verba et litterae: explorations in Germanic languages and German literature. Essays in honor of Albert L. Lloyd.* Newark, DE: Linguatext.

Aissen, Judith (1975). "Presentational *there*-insertion: a cyclic root transformation." *Papers from the 11th Regional Meeting of the Chicago Linguistic Society*, 1–14.

Belletti, Andrea & Luigi Rizzi (1988). "Psych-verbs and Q-theory." *Natural Language and Linguistic Theory, 6*, 291–352.

Boeckx, Cedric (2001). "On the co-occurrence of expletives and definite subjects in Germanic." In W. Abraham & C. J.-W. Zwart (Eds.), *Topics in formal German(ic) typology* (pp. 45–64). Amsterdam & Philadelphia: John Benjamins. [Linguistik Aktuell – Linguistics Today 45]

Burzio, Luigi (1986). *Italian syntax. A Government-Binding approach.* Dordrecht: Kluwer.

Burzio, Luigi (1995/2000). "The Rise of Optimality Theory". *Glot International, 1*(6) (1995), 3–7. Updated in *The First Glot International State-of-the-Article Book. The Latest in Linguistics* (Lisa Cheng & Rint Sybesma, Eds). Berlin / New York: Mouton de Gruyter.

Chomsky, Noam (1981). *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Cinque, Guglielmo (1990). "Ergative adjectives and the Lexicalist Hypothesis." *Natural Language and Linguistic Theory, 8*, 1–39.

Den Besten, Hans (1992). "Some remarks on the Ergative Hypothesis." In W. Abraham (Ed.), *Erklärende Syntax des Deutschen* (pp. 53–74). Tübingen: G. Narr. [Studien zur deutschen Grammatik 25]. [1982 as "Die Ergativhypothese und ihre Folgen für die Syntax des Deutschen und Niederländischen." *Groninger Arbeiten zur germanistischen Linguistik* (*GAGL*), *21*, 61–82.]

Diesing, Molly (1992). *Indefinites*. Cambridge, MA: MIT Press.

Dixon, R. M. W. (1994). *Ergativity*. Cambridge: Cambridge University Press.

Gelderen, Elly van (2004). "Aspect, infinitival complements, and evidentials." In A. ter Meulen & W. Abraham (Eds.), *Composing meaning: from lexeme to discourse*. Amsterdam-Philadelphia: John Benjamins.

Haider, Hubert (1984). "Was zu *haben* ist und was zu *sein* hat." *Papiere zur Linguistik, 30*(1), 22–36.

Heilmann, Axel (1988). Syntaktische Korrelate der Argumentstruktur – 'ergative' Verben im Deutschen. MA thesis University of Stuttgart.

Heim, Irene (1982). The semantics of definite and indefinite NPs. Ph.D. thesis Univ. of MA, Amherst.

Hoekstra, Teun & René Mulder (1990). "Unergatives as copular verbs; locational and existential predication." *The Linguistic Review, 7*, 1–79.

Höhle, Tilmann (1982). "Explikation für ,normale Betonung' und ,normale Wortstellung." In W. Abraham (Ed.), *Satzglieder im Deutschen. Vorschläge zur syntaktischen, semantischen und pragmatischen Fundierung*. Tübingen: G. Narr. [Studien zur deutschen Grammatik 15]

Jackendoff, Ray (1994). *Patterns in the mind: language and human nature*. New York: Basic Books.

Laka, Itziar (2000). "Theta-blind case: Burzio's Generalization and its image in the mirror". In E. J. Reuland (Ed.), 103–129.

Lambrecht, Knud (2001). The French presentational relative construction. International Construction Grammar Conference, UC Berkeley, April 2001.

Legendre, Geraldine, Grimshaw, Jane, & Vikner, Sten (Eds.). (2001). *Optimality-theoretic syntax*. Cambridge, MA: MIT Press.

Marantz, Alec (2000). "Case and licensing". In E. J. Reuland (Ed.), 11–30.

Meinunger, André (1993). "Case configuration and referentiality." *Console* II. The Hague: Holland Academic Graphics.

Milsark, Gary (1974). Existential sentences in English. Unpublished Ph.D. thesis MIT.

Milsark, Gary 1977. "Toward an explanation of certain peculiarities of the existential construction in English." *Linguistic Analysis, 3*(1), 1–29.

Peeters, Bert (2002). "Review of Reuland (Ed.) (2000)". *Studies in Language, 26*(3), 681–690.

Peeters, Bert (in preparation). *La sémantique de l'inaccusativité*.

Pesetsky, David M. (1995). (ms. 1992). *Zero syntax: experiencers and cascades*. Cambridge, MA: MIT Press.

Philippi, Julia (1999). "The rise of the article in the Germanic languages." In Ans van Kemenade & Nigel Vincent (Eds.), *Parameters of morphosemantic change* (pp. 62–93). Cambridge: UCP.

Reuland, Eric J. (Ed.). (2000). *Arguments and case: explaining Burzio's Generalization*, 129–190. Amsterdam: J. Benjamins. [Linguistics Today – Linguistik Aktuell 34]

Runner, J. (1993). "Quantificational objects and AgrO." *MITWPL, 20.*

Ward, Gregory & Betty Birner (1995). "Definiteness and the English existential." *Language, 71*(4), 722–742.

Mapping meaning to information structure

Either, both and *neither* in coordinate structures⋆

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1. Introduction

When the elements *either*, *both* and *neither* occur in a coordinate structure, they are usually analyzed as conjunctions. In this paper, it is argued that these elements are better analyzed as focus particles. The analysis of these so-called initial or correlative conjunctions as focus particles is motivated by their resemblance to focus particles with respect to (1) their distribution, (2) their interaction with sentential intonation, and (3) their contribution to the interpretation of the sentence.

In many studies of coordination, elements such as English *either, both* and *neither* are analyzed as conjunctions which precede the first conjunct (see, for example, Gazdar et al. 1985; Grootveld 1994; Larson 1985; Neijt 1979; Sag et al. 1985; Schwarz 1999). For this reason, coordination involving one of these elements is usually referred to as initial coordination. Other terms that are used to refer to this type of coordination are discontinuous coordination, correlative coordination and binary coordination. These terms relate to the observation that *both*, *either* and *neither* must co-occur with a particular conjunction: *both* with *and*, *either* with *or* and *neither* with *nor*. This is illustrated in (1).

(1) Initial coordination:
   a. both Pat and Kim
   b. either Pat or Kim
   c. neither Pat nor Kim

Although *both*, *either* and *neither* resemble coordinating conjunctions in that they usually precede a conjunct in a coordinate structure, it has been ar-

gued that *either* in (1b) cannot be a conjunction (Hendriks 2001; Johannessen 1998: 154ff.). The reason is that *either* can also occur displaced from the left edge of its conjunct, in contrast to true conjunctions such as *and*, *or* and *nor*. This is shown in (2), where *either* occurs to the left of this position, and in (3), where *either* occurs to the right of this position.

(2)   Jane either ate [the rice] or [the beans].

(3)   [Jane either ate the rice] or [she ate the beans].

This behavior of *either* remains unexplained under an analysis of *either* as a conjunction, because true conjunctions like *and*, *or* and *nor* are not allowed to occur displaced from the conjunct they introduce. While maintaining an analysis of *either* as a conjunction, Larson (1985) and Schwarz (1999) attempt to account for cases of left shifted *either* as in (2) through movement of *either* and deletion within the second conjunct, respectively. However, as is shown by Hendriks (2001), their analyses cannot be extended to account for cases of right shifted *either* like (3).

    If it is assumed that *either* is a conjunction, also no explanation is provided for the observation that the distribution of *either* seems to be sensitive to the pattern of intonation of the sentence. This is illustrated by the following pair of sentences:

(4)   Either JANE will eat the rice or JOHN (will eat the rice).

(5)   *JANE will either eat the rice or JOHN (will eat the rice).

Here, capitals indicate contrastive stress. As these examples show, *either* must c-command the element in the first conjunct bearing contrastive stress, i.e., *Jane*. If *either* does not c-command this element, as in (5), the result is unacceptable.

    Hendriks (2001: 136) suggests that these observations might be explained if *either* is a marker of contrastive focus. In this paper, this suggestion will be investigated in more detail. In particular, the properties of *either* will be compared to those of *both* and *neither*. If *either* in coordinate constructions is a focus particle, this is likely to be a property of initial conjunctions in general. Thus, *both* and *neither* might also be focus particles. This assumption will be tested by comparing *either*, *both* and *neither* to focus particles with respect to a number of properties. These properties include their distribution, their interaction with sentential intonation, and their contribution to the interpretation of the sentence. In Section 2, we will look at *either*. Section 3 will be concerned with *both*, and Section 4 will focus on *neither*.

2.   *Either*

In this section, we will be concerned with the initial conjunction *either*. We will look at its distribution, the way it interacts with intonation, and its contribution to the interpretation of the sentence. The behavior of *either* with respect to these properties will be compared to the behavior of focus particles, such as *only*.

2.1   The distribution of *either*

As was shown in the previous section, *either* is able to appear in other positions than the position preceding the first conjunct. In this respect, *either* displays a wider distribution than conjunctions such as *or*. The conjunction *or* is only allowed to appear in the position immediately preceding the conjunct it introduces.

With respect to its attachment possibilities, on the other hand, *either* shows a more limited distribution than *or*. As has been observed by Neijt (1979), *either* is not allowed to attach to lexical heads. Neijt (1979: 3) illustrates this by the examples in (6)–(8). The a-examples below are unacceptable because *either* attaches to what seems to be a lexical head (N, A, and P, respectively) or perhaps some other non-maximal projection. In the b-examples, on the other hand, *either* attaches to a maximal projection (NP, AP, and PP, respectively). Because only attachment to a maximal projection is allowed, the b-examples are acceptable.

(6)   a.   *a small either bus or car
        b.   either a small bus or a small car

(7)   a.   *right either above or beneath that little chest
        b.   either right above that little chest or right beneath it

(8)   a.   *very either red or blue
        b.   either very red or very blue

Exactly the same pattern of acceptability can be observed with focus particles, such as *only*:

(9)   a.   *a small only bus
        b.   only a small bus

(10)   a.   *right only above that little chest
         b.   only right above that little chest

(11) a. *very only red
      b.   only very red

As is shown by the unacceptability of the a-examples in (9)–(11), the focus particle *only* is not allowed to attach to non-maximal projections either. Thus, *either* resembles the focus particle *only* in the impossibility to attach to non-maximal projections. Interestingly, this restriction does not hold for simple, non-initial, conjunctions. Non-initial coordination is possible of maximal as well as non-maximal projections:

(12) a. a small bus or car
      b.   a small bus or a small car

(13) a. right above or beneath that little chest
      b.   right above that little chest or right beneath it

(14) a. very red or blue
      b.   very red or very blue

In (12a), for example, *or* conjoins the noun heads *bus* and *car*. Note that, because non-initial conjunctions such as *or* are allowed to attach to noun heads, the unacceptability of (6a) cannot be explained on the grounds that nothing can ever intervene between an adjective and a noun, except another adjective. If *either* in (6a) were a conjunction with the same distributional properties as *or*, *either* should be able to attach to a noun head and thus be able to intervene between an adjective and a noun.

Although this difference between the possibility of initial coordination and non-initial coordination, as illustrated by the difference in acceptability between (6a)–(8a) and (12a)–(14a), has been observed before, no satisfactory explanation has ever been given for this difference. Neijt (1979), for example, merely introduces an *ad hoc* restriction for non-initial coordination. Kayne (1994) assumes that only maximal projections can be conjoined. This explains why (6a)–(8a) are unacceptable. However, under this assumption the acceptability of apparent cases of head coordination such as (12a)–(14a) becomes problematic. Kayne is forced to assume that what looks like coordination of heads must in fact be derived from coordination of maximal projections. He takes the operation responsible for deriving head coordination from coordination of maximal projections to be Right Node Raising. Under Kayne's analysis, the structure of (12a)–(14a) must be as follows:

(15) [a small]$_1$ bus or [e]$_1$ car

(16) [right]$_1$ above or [e]$_1$ beneath that little chest

(17)   [very]₁ red or [e]₁ blue

However, as Johannessen (1998: 183–185) already points out, a problem with this analysis is the fact that Right Node Raising always requires the empty category to precede its licencer. In (15)–(17), in contrast, the empty category follows its licencer. Therefore, (12a)–(14a) cannot be derived from (12b)–(14b) through Right Node Raising. Hence, Kayne's analysis of coordination cannot account for the acceptability of (12a)–(14a). As a result, Kayne's analysis does not provide a satisfactory explanation for the difference in acceptability between initial and non-initial coordination of non-maximal projections.

   The observed difference between initial coordination and non-initial coordination appears problematic for any theory of coordination which treats *either* as a conjunction. However, if *either* is analyzed as a focus particle, the difference in acceptability between (6a)–(8a) and (12a)–(14a) automatically follows from restrictions on the distribution of focus particles. Focus particles in general are not allowed to attach to non-maximal projections (cf. Bayer 1996). If *either* is a focus particle, it follows that it is not allowed to attach to non-maximal projections. Hence, an explanation is provided for the difference in acceptability between (6a)–(8a) and (12a)–(14a). Note that *either* and *only* are not completely identical in their distribution. Whereas there do not seem to be any restrictions on the type of sentences that *only* can occur in, *either* in the above examples always co-occurs with *or*.

2.2 The interaction of *either* with intonation

As was already mentioned in Section 1, *either* must c-command the element in the first conjunct bearing contrastive stress. The relevant examples are repeated below:

(18)   Either JANE will eat the rice or JOHN will eat the rice.

(19)   *JANE will either eat the rice or JOHN will eat the rice.

If contrastive stress falls on the subject, *either* must c-command the subject. This is the case in (18). If *either* does not c-command the stressed subject, the result is an ill-formed sentence, as can be witnessed by the unacceptability of (19). The same kind of interaction with intonation seems to occur with the focus particle *only*. As observed by Jackendoff (1972: 247–254), *only* can associate with almost any focused phrase in the sentence as long as the particle c-commands the focused phrase.

(20)   Only JANE will eat the rice.

(21)   *JANE will only eat the rice.

So both *either* and *only* must have an intonationally prominent element in their c-command domain. If not, the sentence is unacceptable. In the case of *either*, this intonationally prominent element is the element in the first conjunct that is contrasted with an element in the second conjunct. Both contrasted elements carry contrastive focus. In the case of *only*, the required intonationally prominent element is the element in focus.

2.3 Scope ambiguities with *either*

In the preceding two subsections, it was argued that *either* and *only* behave similarly with respect to their distribution as well as with respect to their interaction with intonation. The remainder of this section will be concerned with a comparison of the contribution of these two elements to the interpretation of the sentence. The discussion consists of two parts. First, we will look at the scope properties of sentences with *either* and *only*. Next, we will look at the semantics of *either* and *only*.

It has been observed that sentences with *only* sometimes show scope ambiguities (Taglicht 1984: 142–164). For instance, sentence (22) is ambiguous between a reading according to which they were advised not to learn any other language, and a reading according to which they were not advised to learn any other language. The first reading arises if the scope of *only* is confined to the lower clause. The second reading arises when *only* has scope over the matrix clause.

(22)   They were advised to learn only [$_{NP}$ Spanish].

(23)   They were only [$_{VP}$ advised to learn Spanish].

Taglicht also observes that if *only* is shifted to the position preceding the matrix verb, this scope ambiguity disappears. Hence, (23) (i.e. Taglicht's example (73)) does not have the first reading, but only the second reading. Because the scope ambiguity is resolved if *only* is placed in front of a VP, a plausible assumption is that the ambiguity of (22) is a normal quantifier scope ambiguity, arising as a result of [*only Spanish*] being a quantified NP (cf. Rooth 1985; Krifka 1992). Hence, *only* does not seem to get wide scope on its own, but only when carried 'piggy-back' by expressions that can get wide scope, such as NPs. Because VPs are not scope taking expressions, (23) is not ambiguous.

Interestingly, similar scope ambiguities have also been observed with *either* in coordinate structures. According to Larson (1985), (24) is ambiguous. The disjunction can be interpreted inside or outside the scope of the intensional verb. According to the first reading, Mary is looking for a servant and would be satisfied with anyone who is a maid or a cook. According to the second reading, Mary is looking for a maid or Mary is looking for a cook, but the speaker does not know which.

(24)   Mary is looking for either [NP a maid or a cook].

(25)   Mary is either [VP looking for a maid or a cook].

In sentence (25), on the other hand, the disjunction can only be interpreted outside the scope of the intensional verb. So the pattern of ambiguities with *either* seems to be similar to that with *only*. Indeed, the following sentences with *either* seem to show the same pattern of ambiguity as the sentences with *only* in (22) and (23):

(26)   They were advised to learn either [NP Spanish or German].

(27)   They were either [VP advised to learn Spanish or German].

Also here, ambiguity arises if *either* is placed in front of a NP conjunction. According to the first reading, the advice was to learn Spanish or to learn German. This reading is not available in (27). According to the second reading, the advice was to learn Spanish or the advice was to learn German. No ambiguity arises if *either* is placed in front of a VP conjunction. This sentence only has the latter reading for most speakers of English. These interpretations suggest that *either* behaves like a focus particle with respect to scope ambiguities.

2.4 The contribution of *either* to the interpretation of the sentence

A second aspect of the interpretation of sentences with focus particles that we will look at here concerns the interaction of the focus particle with the focus in the sentence. König (1991) distinguishes three properties of the interaction of focus particles with their focus: (i) sentences with focus particles entail the corresponding sentence without particles, (ii) focus particles quantify over the set of alternatives introduced by focus, and (iii) focus particles may include or exclude these alternatives as possible values for the open proposition in their scope. Additive particles such as *also* and *too* include alternatives as possible values for a given open proposition. *Only*, on the other hand, is a restrictive particle: it excludes all alternatives. If the approach to focus proposed by

Rooth (1985) is adopted, these alternatives are introduced by focus. According to Rooth, sentences do not only have an ordinary semantic value, but also have a focus semantic value. The focus semantic value is obtained by substituting other possible values for the focused phrase. This can be illustrated by the following example, which is Rooth's example (21):

(28)   John only SWIMS.

This sentence has the ordinary semantic interpretation that John swims. Because *swims* is focused, this sentence introduces a set of alternatives. This set of alternatives is obtained by substituting other properties for *swims* in the proposition in (28). Thus, the focus semantic value of this proposition is the set of properties that are of the same semantic type as *swims*, for example the properties of running and of playing tennis. The property of swimming also is a member of this set. Because *only* excludes all other members from this set, the resulting interpretation is that John does nothing but swim. This focus-influenced component of meaning is given in (29). The formula in (29) states that for all properties P that hold for John and that are a member of a certain set of properties C, it holds that this property P is identical to the property expressed by *swims*.[1]

(29) $\forall P \, [(P(j) \,\& \,C(P)) \rightarrow P = \text{swim}']$

The set C is the set of contextually relevant properties. The restriction in (29) that P must be a member of the set of contextually relevant properties is important, since we do not want to claim that if John only swims, he does not have the property of being John or does not breath. Relevant properties for (28) are, for example, exercise activities such as running and playing tennis, but not breathing and being John.

Now let us look at *either*. Sentence (30) clearly entails the sentence without *either*, which expresses the assertion that Jane ate the rice or that she ate the beans.

(30)   Jane ate either the RICE or the BEANS.

If *either* is a focus particle, it should be possible to formulate a focus-influenced component of meaning similar to (29). Such a focus-influenced component of meaning might be as follows:

(31) $\forall x \, [(\text{eat}'\,(j,x) \,\& \,C(x)) \rightarrow x \in \{r,b\}]$

This formula states that for all things such that Jane ate them and such that they are in the set of contextually relevant objects, it holds that these things are

members of the set that only contains the rice and the beans. Hence, according to the formula in (31) *either* excludes all alternatives introduced by focus as possible values for the open proposition. The only values that are possible are the two values introduced by the two conjuncts. The role of the conjunction *or* is to introduce the domain where the second value must be found.

Whether *either* indeed has a restrictive interpretation as in (31), or in other words, whether *either* is exhaustive in that it requires all possible values for the open proposition to be expressed explicitly by the disjunction, is still an open issue. According to Zimmermann (2000:267–268), the function of *either* is indeed to mark exhaustivity explicitly. Zimmermann points out that *either-or* disjunctions require closure intonation, unlike disjunctions without *either*. Because closure intonation indicates that the space of all possibilities has been covered, *either* must express exhaustivity. If Zimmermann is correct in his claim that *either* is exhaustive, this would provide another argument that *either* must be analyzed as a focus particle.

2.5 Inclusive versus exclusive disjunction

The issue of exhaustivity, as discussed in the previous subsection, must be distinguished from the issue of exclusivity. An exclusive disjunction is true if exactly one of the conjuncts is true, whereas an inclusive disjunction is true if at least one of the conjuncts is true. As is wellknown, simple *or* disjunctions can be interpreted inclusively or exclusively, depending on context and world knowledge. The standard solution in semantics is to posit just one *or*, which has an inclusive meaning (see, e.g., Simons 2001). The exclusive interpretation is derived pragmatically through Gricean implicature. Someone who uses a disjunction apparently is not in a position to claim that both conjuncts are true. Otherwise, the speaker would have used the stronger statement of a conjunction.

Relevant to the present discussion is the question whether *either* can force an exclusive interpretation onto the disjunction. An anonymous reviewer pointed out that *either* is used exactly to make it clear that exclusive disjunction is intended. The suggested treatment of *either* fails to capture this fact. However, McCawley (1981:230–231) argues that the exclusivity of the disjunction is not only an illusion in simple *or* disjunctions, but also in *either-or* disjunctions. First of all, many supposed examples of exclusive disjunction are examples in which it is (logically or otherwise) impossible for more than one of the conjuncts to be true.

(32)   Today is either Monday or Tuesday.

Only relevant for the present discussion are sentences in which it is possible for both conjuncts to be true, but which nevertheless suggest that the two conjuncts are not both true. However, McCawley argues that the exclusive disjunction in these cases is merely an illusion. To illustrate this, he discusses the following example:

(33)   On the $1.50 lunch you get either a soup or a dessert.

According to McCawley, when one is offered a package deal, one is not normally required to accept all the items in the package. If the conjunction *and* were used, the hearer would not have been required to take both soup and a dessert. However, the hearer would have been entitled to do so. The offer in (33) entitles the hearer to take a soup and entitles the hearer to take a dessert. If the hearer were not entitled to these two items, a linguistically simpler alternative such as *On the $1.50 lunch you get a soup* would correctly express the offer. Similarly, the hearer is not entitled to take both, because if the hearer were, the conjunction *and* would have been used. So the hearer is entitled to exactly as much as is consistent with the Gricean maxims of quantity, manner, and relevance. This example illustrates that we do not need to posit an exclusive disjunction to account for the relevant data. Following McCawley, I will therefore assume that *either* does not express exclusive disjunction. The proposed treatment of *either* correctly reflects this assumption.

  Summarizing, in this section it was argued that *either* resembles *only* in several respects. First, *either* and *only* have a similar distribution, which cannot be explained under an analysis of *either* as a conjunction without making several additional assumptions. Secondly, *either* clearly shares the focus sensitivity of focus particles. And thirdly, *either* gives rise to similar scope ambiguities as *only* and might even interact with focus in a comparable way. In the remainder of this paper, we will investigate whether this resemblance to focus particles also holds for the initial conjunctions *both* and *neither*. If so, then there is no need to distinguish initial coordination as a special kind of coordination. Rather, only one type of coordination exists, in which a focus particle may or may not appear in the part of the coordinate structure preceding the conjunction.

3.   *Both*

In the previous section, several properties were discussed that are exhibited by the element *either* as well as by the focus particle *only*. In this section, we will investigate whether these properties also hold for *both*.

3.1   The distribution of *both*

At first sight, *both* appears to be a true conjunction, in contrast to *either*. Larson (1985:236–237) argues that *both* differs importantly from *either* in that it cannot be separated from the first conjunct by intervening material:

(34)   a.   Mary is both [going to school] and [holding down a job].
       b.   *? Mary both is [going to school] and [holding down a job].
       c.   *Both Mary is [going to school] and [holding down a job].

In the acceptable sentence (34a), *both* occurs in the position immediately preceding the first conjunct, as expected if *both* were a conjunction. In (34b) and (34c), on the other hand, material intervenes between *both* and the first conjunct. These sentences are marginal at best or even completely unacceptable. This seems to confirm the view that *both* is a conjunction which cannot be separated from the coordinate structure by intervening material. However, Larson also provides the following sentence, in which *both* occurs inside the first conjunct:

(35)   [Mary is both going to the wedding] and [she is attending the reception afterwards].

This sentence is parallel to sentence (3) in Section 1, where *either* occurs inside the first conjunct. Thus, *both* in principle seems to be able to occur in other positions than the position immediately preceding the first conjunct. This suggests that the unacceptability of *both* in the position preceding the auxiliary in (34b) and in sentence initial position in (34c) must have some other explanation. Indeed, *both* cannot appear in these positions, even if these positions correspond to the position immediately preceding the first conjunct:[2]

(36)   a.   *?Mary both [is going to the wedding] and [will be attending the reception afterwards].
       b.   *Both [Mary is going to the wedding] and [she is attending the reception afterwards].

In these examples, *both* occurs in the position immediately preceding the first conjunct. Nevertheless, the two sentences are unacceptable. Thus, the unacceptability of (34b) and (34c) does not seem to follow from the status of *both* as a conjunction, but appears to have some other reason.

That the distribution of *both* is comparable, although not completely identical to the distribution of *either* is supported by the following sentences (from the Selected Works of Edgar Allan Poe). These examples show that *both* can indeed occur separated from the first conjunct by intervening material:

(37) a. These circumstances proved fortunate *both* for [myself] and [Augustus].
      b. There was (...) a remarkably thick and valuable carpet covering the floor of *both* the [cabin] and [staterooms].
      c. The windows, *both* of the [back] and [front] room, were down and firmly fastened from within.

These examples show that *both* can appear to the left as well as to the right of the position preceding the first conjunct, just like *either*. In a number of cases, there even is some optionality with respect to the position of these elements. So the distribution of *both* and *either* is not strictly determined by the coordinate structure. This property is very hard to explain if these elements are analyzed as conjunctions occurring in a coordinate structure.

So *either* and *both* seem to share with focus particles their relatively free distribution. Also with respect to its attachment site, *both* shows the same restrictions as *either* and other focus particles. That is, *both* is not allowed to attach to non-maximal projections:

(38) a. *a small both bus and car
      b. both a small bus and a small car

(39) a. *right both above and beneath that little chest
      b. both right above that little chest and right beneath it

(40) a. *very both red and blue
      b. both very red and very blue

The unacceptable cases are all instances of attachment of *both* to a lexical head or other non-maximal projection. In the acceptable cases, *both* is attached to a maximal projection. If it is assumed that the element *both* occurring in coordinate structures is a focus particle, this restriction automatically follows, since focus particles attach to XPs only. On the other hand, if *both* were a conjunction here, additional assumptions would be necessary to explain the

unacceptability of the a-examples, since simple, non-initial, coordination is possible of non-maximal projections. Therefore, the syntactic behavior of *both* strongly suggests that *both* is a focus particle.

3.2   The interaction of *both* with intonation

In Section 2.2, it was shown that *either* is sensitive to the pattern of intonation of the sentence. In this section, it will be investigated whether this is also true for *both*. At first sight, it might seem as if *both* is not subject to the requirement that it must c-command the element carrying contrastive focus. However, it will be argued that in cases where *both* does not c-command the contrasted element, *both* is not a focus particle, but a floating quantifier.

 Larson (1985) relates the fact that *either* can appear to the left of its standard position to certain scope ambiguities observed with disjunction. Crucial for his analysis is the assumption that *either* and *both* differ syntactically, since conjunctions do not display similar scope ambiguities. As an argument in favor of his claim that the apparently similar elements *either* and *both* have in fact a different syntactic status, Larson (1985:260) notes that *both* can occur in positions in which *either* cannot occur:

(41) a.   [John and Bill] both are going.
    b. *[John or Bill] either is going.

Example (41a) seems to show that *both* is not subject to the c-command requirement that holds for *either* and *only*. According to this requirement, the focus particle must c-command the focused phrase that it associates with. However, in addition to their use in coordinate structures, elements such as *either* and *both* have other uses as well. *Either*, for example, can also occur if no disjunction is present in the sentence. In that case, *either* is used as a quantificational determiner, or as a suppletive form of *too* (see Rullmann (to appear), for a discussion of this latter, sentence-final, use of *either*). Again, all examples are taken from the Selected Works of Edgar Allan Poe.

(42) a.   "I am quite ashamed to confess," I replied, "that I have never even heard the names of *either* gentleman before".
    b.   Had I not been a Scarabeus, therefore, I should have been without bowels and brains; and without *either* it is inconvenient to live.
    c.   I will have none of their rabbit au-chat- and, for the matter of that, none of their cat-au-rabbit *either*.

In (42a), *either* is used as a quantificational determiner. In (42b), *either* can be analyzed as a quantificational determiner lacking its noun phrase complement, or as a bound pronoun. The use of *either* as a suppletive form of *too* occurring in negative contexts is illustrated in (42c). As is shown by the following examples, *both* can be used in a way parallel to the uses of *either* in (42a) and (42b):

(43)   a.   The first action of my life was the taking hold of my nose with *both* hands.
       b.   Presently he took from his coat pocket a wallet, placed the paper carefully in it, and deposited *both* in a writing-desk, which he locked.

In addition to its use in coordinate structures and as a quantificational determiner, *both* has a third use as a floating quantifier (Schwarzschild 1996). In this third use, *both* seems to be able to 'float' out of the subject NP into the VP. Other quantifiers that have this property are *all* and *each*. *Either*, on the other hand, does not have this use as a floating quantifier. Examples of floating *both* are given below:

(44)   a.   Here are pistols; and we *both* know how to use them when occasion demands their use.
       b.   Contradictories cannot *both* be true.
       c.   They were *both* then lying on the sacking of the bedstead in the chamber where Mademoiselle L. was found.

Now let us return to the sentences in (41) again. In (41a), which differs from (41b) in that *both* occurs at the right edge of the coordinate structure, whereas *either* cannot, *both* seems to be such a floating quantifier. As the examples in (44) show, this floating quantifier use of *both* is independent of the presence of a conjunction, but merely requires a plural NP introducing exactly two entities. Thus, this different syntactic behavior of *both* as compared to *either* suggests that it has an entirely different use in these constructions. The element *both* which precedes the conjunction *and*, on the other hand, is subject to the same c-command condition that holds for *either* and the focus particle *only*:

(45)   Jane will eat both the RICE and the BEANS.

(46)   *JANE will eat both the rice and JOHN.

Because (45) is acceptable but (46) is not, *both* must be subject to the requirement that it c-commands the element in the first conjunct carrying contrastive stress. This yields support for the assumption that *both* in coordinate structures is a focus particle as well.

3.3 The contribution of *both* to the interpretation of the sentence

Now let us turn to the interpretation of sentences with *both*. As we saw in Section 2.3, *either* does not seem to be a scope bearing expression itself, but rather gives rise to scope ambiguities in being carried 'piggy-back' by an expression that can get wide scope. Because disjunction takes scope, ambiguity can arise when *either* is attached to an NP disjunction. Since conjunction does not take wide scope (Rooth & Partee 1982: 357), *both* is predicted not to have any scope effects. Hence, the following sentence is predicted not to be ambiguous:

(47)   They were forbidden to take both [$_{NP}$ a soup and a dessert].

The verb *forbid* is used here rather than the verb *advise* to be able to distinguish between the two possible readings more easily. Indeed, this sentence does not appear to express the wide scope reading that they were forbidden to take a soup and they were forbidden to take a dessert. Only the narrow scope reading seems to be possible, according to which they were allowed to take only a soup or only a dessert, but could not take both. If *both* is a focus particle and does not take scope by itself, this is as expected.

     The other aspect of the interpretation of sentences with *both* that we will be concerned with here is the way *both* interacts with the focus of the sentence. As mentioned earlier, sentences with focus particles entail the corresponding sentence without the particle. Sentence (48) indeed entails the sentence without *both*, but only in one of its interpretations. According to this distributive reading, Jane ate the rice and she ate the beans.

(48)   Jane ate both the rice and the beans.
(49)   Jane ate the rice and the beans.

The other interpretation of (49), which is not available for (48), is a collective reading in which the two components of the meal might not be identifiable as separate substances anymore. We will return to the absence of a collective reading in coordinate structures with *both* in more detail in the next subsection.

     According to König (1991), an important aspect of the interpretation of focus particles is that they quantify over a set of relevant alternatives. Focus particles include or exclude these alternatives as possible values for the open proposition expressed by the sentence minus the focused phrase. However, *both* does not seem to include or exclude alternative values for the focused phrase. If Jane ate both the rice and the beans, then the possibility is not excluded that she ate potatoes as well. Alternatively, if Jane ate both the rice and the beans, this does not imply that she must have eaten some other food too. At first sight,

then, *both* seems to be neither additive nor restrictive in the sense of König. But if we look at the focus particles *too* and *also*, these elements behave similarly:

(50)   Jane ate the rice and the beans too.

(51)   Jane ate the rice and also the beans.

Too and *also* are additive focus particles. They express the requirement that, besides the focused phrase, at least one alternative value for the focused phrase satisfies the open proposition denoted by the rest of the sentence. If *too* and *also* occur in a coordinate structure, as in (50) and (51), not all alternative values for the focused phrase are implicit and have to be derived from the context. Rather, one alternative value is explicitly given. This is the value that is introduced by the other conjunct in the coordinate structure. For example, in (50), the additive focus particle *too* is attached to the focused phrase *the beans*. The alternative value for the denotation of *the beans* is explicitly given by the first conjunct of the coordinate structure, namely by the phrase *the rice*. No other alternative needs to satisfy the open proposition denoted by the rest of the sentence. If *too* and *also* occur outside the context of a coordinate structure, all alternative values are implicit and must be derived from the context.

Since the focus particle *both* must always co-occur with a coordinate structure, the alternative value for the focused phrase in the syntactic domain of *both* will always be explicitly given by the second conjunct. This focus-influenced component of the interpretation of (48) will therefore be roughly as follows:

(52) $\exists x \, [\text{eat' } (j,x) \, \& \, C(x) \, \& \, (x \neq r)]$

This formula expresses the additional conventional implicature that there is something that Jane ate other than rice. Together with the asserted meaning that Jane ate the rice and the beans, this yields the ultimate interpretation of the sentence. Truthfunctionally, therefore, coordinate structures with *both* do not differ from distributively interpreted coordinate structures without *both*, since the implicature is already contained in the assertion expressed by the sentence. However, this additional implicature might be responsible for the degraded acceptability of initial coordination of nearly synonymous expressions, such as *both kind and friendly*. Note that the distinction between the asserted part of the meaning and the conventionally implicated part of the meaning is opposite in comparison with *either* and other restrictive focus particles. In the case of *only*, the focus-influenced component yields the assertion part of the meaning, and the sentence without *only* yields the conventional implicature. This difference

corresponds to the general asymmetry between the meaning of additive focus particles and restrictive focus particles (cf. König 1991).

So also with respect to its interaction with focus, *both* behaves like a focus particle. Whereas *either* resembles the restrictive focus particle *only*, *both* resembles the additive focus particles *too* and *also*. Also with respect to the other properties discussed, *both* resembles focus particles. For example, *both* was shown not to be able to attach to lexical heads, to be able to occur separated from the first conjunct of the coordinate structure, and to be sensitive to the pattern of intonation of the sentence. Under the assumption that *both* is a conjunction, these properties would remain unexplained. This suggests that *both* can best be analyzed as a focus particle, analogous to *either*.

3.4 Collective versus distributive readings

Before we turn to a discussion of the initial conjunction *neither*, we will briefly return to an issue that was left open in the previous discussion, namely the observation that coordinate structures without *both* allow for a collective reading, whereas this reading is impossible for coordinate structures with *both*. Because collective readings only occur with plurals, this issue does not arise for the two other elements under investigation, *either* and *neither*. Coordinate structures that express a disjunction only have a distributive reading.

The presence or absence of a collective reading is often related to the occurrence of specific elements in the sentence. Certain predicates (e.g., *sneeze*) impose a distributive reading on their subject. Other predicates (e.g., *meet*) trigger a collective reading. A wellknown observation is that *both* yields an unacceptable result if combined with a collective predicate:

(53) *Both John and Mary met.

Various explanations have been given for the lack of collective readings in coordinate structures with *both*. The standard semantic explanation is that NPs that give rise to a collective reading are of a different semantic type than NPs giving rise to a distributive reading. A syntactic explanation is put forward by Winter (1998), who argues that a collective reading only arises if a syntax-driven type shifting operation can apply to the NP coordination to derive a quantifier over plural individuals. Schwarzschild (1996) proposes a pragmatic explanation for the lack of collective readings in coordinate structures with *both*. The hypothesis that distributivity is determined pragmatically explains why a distributive reading is possible but not obligatory with certain elements, such as the quantificational determiner *both* and the quantifier *both*. In contrast, initial

coordination with *both* must always be read distributively. As Schwarzschild already points out, these differences between the possible readings with *both* provide another argument for a distinction between different uses of *both*.

Under the proposed treatment of *both* as a focus particle, no additional assumptions have to be made to account for the obligatory distributive reading of coordinate structures with *both*. A distributive reading automatically follows from the interpretation of sentences with *both* as discussed in the previous subsection. In the case of the unacceptable example (53), the conventional implicature will involve the proposition that there is someone other than John who met. Because this proposition conflicts with the sortal restrictions of the collective predicate *meet*, (53) is correctly predicted to be unacceptable.

Additional evidence for the proposed treatment of *both* yields the observation that not only coordinate structures with *both*, but also coordinate structures with other focus particles show a purely distributive behavior. The a- and b-example below are taken from Winter (1998: 28):

(54)   a.   The Americans and the Russians too fought each other.
        b.   The Americans as well as the Russians fought each other.
        c.   The Americans and also the Russians fought each other.

These sentences carry the distributive meaning that the Americans fought each other and the Russians fought each other. No interpretation is possible according to which the Americans fought the Russians. Interestingly, these constructions all contain a focus particle or an element that can be used as a focus particle. The elements *too* in (54a) and *also* in (54c) are focus particles themselves. *As well* in (54b) is a focus particle when occurring in the same position as *too* in (54a). Apparently, focus particles always force a distributive reading. This distributive reading follows from Rooth's account of focus particles, which was also applied to the initial conjunction *both*. Therefore, the distributive reading forced by *both* yields another argument for *both* in coordinate structures being a focus particle.

4.   *Neither*

In the previous section, it was concluded that *both* in coordinate structures behaves more or less similarly to *either* with respect to its distribution, its interaction with sentential intonation and its semantic correspondence to certain focus particles. Therefore, it was suggested that *both* should be analyzed as a fo-

cus particle too. In this section, we will investigate whether the same properties hold for *neither*.

4.1 The distribution of *neither*

Like *either* and *both*, *neither* can appear in other positions than the position immediately preceding the first conjunct, as the following sentences from Edgar Allan Poe illustrate:

(55) a. It was his custom, indeed, to speak calmly of his approaching dissolution, as of a matter *neither* to be [avoided] nor [regretted].
     b. Hearing the blow and the plunge of the body, the men below could now be induced to venture on deck *neither* by [threats] nor [promises].

(56) a. If (...) it was found to come [under *neither* the category Aries (...)] nor [under the category Hog], why then the savans went no farther.
     b. [The gale had *neither* abated in the least], nor [were there any signs of its abating].

The examples in (55) show that intervening material can occur between *neither* and the first conjunct. In the examples in (56), *neither* occurs inside the first conjunct. The observation that *neither* can occur in the position at the left edge of the first conjunct as well as to the left and right of this position corresponds to the property of focus particles of being able to appear in several positions in the sentence.

 Note that if the second conjunct is clausal, subject auxiliary inversion is required in this second conjunct, witness (56b). If *neither* occurs sentence initially while introducing a clausal conjunct, the first conjunct also undergoes inversion (*Neither had the gale abated ...*). Clausal conjunction thus reveals some syntactic differences between *either, both* and *neither*. Whereas *either* can attach to IP, *both* and *neither* are not able to attach to IP. *Both* must attach at a lower level (see Note 3). *Neither*, on the other hand, may occur in a higher position, namely in the specifier position of the CP, as the inversion facts show. The possibility of *neither* and *nor* to occur in this position might be related to the negative feature they contain. However, we will not pursue this issue here, since it falls beyond the scope of this paper.

 With respect to its attachment possibilities, *neither* resembles *either, both* and other focus particles. That is, *neither* is not allowed to attach to non-maximal projections:

(57)   a.   *a small neither bus nor car
       b.   neither a small bus nor a small car

(58)   a.   *right neither above nor beneath that little chest
       b.   neither right above that little chest nor right beneath it

(59)   a.   *very neither red nor blue
       b.   neither very red nor very blue

Again, simple, non-initial, coordination with *nor* is possible of lexical heads and other non-maximal projections. As argued extensively in the discussion of *either* in Section 2.1, this pattern suggests that *neither* is not a conjunction.

4.2 The interaction of *neither* with intonation

Neither interacts with the intonation of the sentence in exactly the same way as *either* and *both* do. As the following sentences show, *neither* must c-command the phrase carrying contrastive focus:

(60)   Neither will JANE eat the rice nor JOHN.

(61)   *JANE neither will eat the rice nor JOHN.

This property of *neither* not only corresponds to the properties displayed by *either* and *both,* but also to the properties of focus particles in general.

As was the case with *either* and *both*, there are apparent exceptions to this c-command requirement:

(62)   a.   It is not too much to say that *neither* of us believe in praeternatural events.
       b.   (...) they effected their escape to their own country: for *neither* was seen again.
       c.   Upon attempting to move from my position, I found that (...) I could not get up; *neither* could I move my right arm in any direction.

Again, these sentences are taken from the Selected Works of Edgar Allan Poe. In these cases, *neither* is not used as a focus particle, but has another use. In (62a), *neither* is used as a quantificational determiner. Here we can observe a difference between the quantificational determiners *either* and *neither*, on the one hand, and the quantificational determiner *both*, on the other. *Either* and *neither* combine with a singular noun or with an *of*-PP containing a plural noun phrase. *Both*, on the other hand, must combine with a plural noun or noun phrase directly. This difference is to be expected, given that the conjunction occurring with *both* expresses a plural, whereas the disjunction occurring with

either and *neither* does not. In (62b), *neither* can be analyzed as a quantifica-
tional determiner lacking a noun phrase complement, or as a bound pronoun.
In (62c), finally, *neither* is used as the negative variant of *also*, with the meaning
'also ... not'. In none of these uses, *neither* is required to c-command a focused
phrase. However, if *neither* occurs with a coordinate structure, as in (60) and
(61), it must c-command the contrasted element.

4.3 The contribution of *neither* to the interpretation of the sentence

This subsection is concerned with the scope properties of *neither* and its in-
teraction with focus. Not surprisingly, perhaps, *neither* shows the same scope
effects as *either*. This is illustrated by (63) and (64), which are parallel to (26)
and (27) in Section 2.3. Sentence (63) is ambiguous. According to the first read-
ing, the advice was not to learn Spanish and not to learn German. This reading
is not available for (64). The second reading of (63) states that they were not
advised to learn Spanish and they were not advised to learn German. This is
also the reading expressed by sentence (64), which is not ambiguous.

(63)   They were advised to learn neither [$_{NP}$ Spanish nor German].

(64)   They were neither [$_{VP}$ advised to learn Spanish nor German].

The interpretation of these sentences can again be explained by assuming that
neither is not a scope bearing expression itself, but gets wide scope through the
ambiguity of the disjunction.

   So *neither* resembles *either* with respect to the possibility of scope ambigu-
ities. Now let us turn to the interaction of *neither* with focus. Does *neither* also
resemble *either* with respect to its interaction with the focus in the sentence?
The first impression is that this does not seem to be the case. Usually, sentences
with *neither* entail the sentence without *neither* only if *neither* is replaced by
negation. Thus, sentence (65) entails sentence (66):

(65)   Jane ate neither the rice nor the beans.

(66)   Jane didn't eat the rice nor the beans.

Sentence (66) contains an overt sentential negation. However, in certain cases
no overt negation needs to be present, as illustrated by the following examples,
from the Selected Works of Edgar Allan Poe:

(67)   a.   The instant that I left 'the devil's seat', however, the circular rift van-
            ished; nor could I get a glimpse of it afterwards.
       b.   I (...) heeded these things but little, nor spoke of them to Rowena.

Apparently, a negative implication is enough to satisfy the requirements of *nor*. In (67a), such a negative implication arises from the verb *vanished*. In (67b), it arises from the phrase *but little*. This suggests that the requirement of negation in the first conjunct is not a semantic requirement, but rather a presupposition introduced by *nor*. This presupposition can be met by the element *neither*, but also by an overt sentential or phrasal negation or a negative implication.

Apart from this presupposition on negation, the interaction of *neither* with focus is similar to the interaction of *either* with focus. If *either* excludes all alternatives as possible values in the open proposition, *neither* is the complement of *either*. It excludes the values introduced by the conjuncts as possible values in the open proposition. The focus-influenced part of the meaning of (65) then looks as follows:

(68) $\forall x \, [(eat' \, (j,x) \, \& \, C(x)) \rightarrow x \notin \{r,b\}]$

This formula expresses the assertion that of all things eaten by Jane, the rice and the beans are excluded. Thus, the set of entities excluded by *neither* is the complement of the set of entities excluded by *either*.

Summarizing, in this section it was shown that *neither* does not behave like a conjunction. *Neither* can appear in other positions than the position immediately preceding the first conjunct, it cannot attach to non-maximal projections, it requires a focused phrase in its c-command domain, and it shows scope ambiguities which are similar to those displayed by focus particles. These properties cannot be explained if *neither* is a conjunction. If *neither* is a focus particle, on the other hand, these properties automatically follow.

5.   Conclusion

In this paper, it was argued that the elements *either*, *both* and *neither* occurring in coordinate structures must be analyzed as focus particles, rather than as conjunctions. These elements resemble focus particles with respect to their distribution, their interaction with the focus in the sentence, and their semantic properties. Whereas *either* and *neither* behave like restrictive focus particles, *both* behaves like an additive focus particle. In addition to their use as focus particles, *either*, *both* and *neither* also have other uses. These other uses are governed by other restrictions, and may have blurred the discussion of these elements in the literature.

Notes

1. Note that although the focus-influenced component of meaning in (29) is determined by the semantics of *only*, no focus particle needs to be present to trigger a set of alternatives. Focus alone already triggers such a set of alternatives, witness the interpretation of *John SWIMS*.

2. An exception to this generalization are sentences like the following, where *both* precedes a conjoined subject:

(i)   Both [Mary and John] laughed.

Clearly, *both* occupies different structural positions in (i) and in (36b). In (i), *both* is attached to a NP, whereas in the unacceptable sentence (36b), *both* is attached to an IP. Apparently, attachment of *both* to IP is ruled out for some independent reason. Note that attachment of the focus particle *only* to IP is not possible either. *Either*, on the other hand, does allow attachment to IP. However, as is noted by Hoeksema and Zwarts (1991), there is considerable variation among focus adverbs along several dimensions, including their placement.

References

Bayer, Josef (1996). *Directionality and Logical Form: On the scope of focussing particles and wh-in-situ*. Dordrecht: Kluwer.

Gazdar, Gerald, Ewan Klein, Geoffrey K. Pullum, & Ivan A. Sag (1985). *Generalized Phrase Structure Grammar*. Cambridge, MA: Harvard University Press and Oxford: Blackwell.

Grootveld, Marjan (1994). *Parsing Coordination Generatively*. Ph.D. dissertation, University of Leiden.

Hendriks, Petra (2001). "Initial Coordination and the Law of Coordination of Likes". In T. van der Wouden & H. Broekhuis (Eds.), *Linguistics in the Netherlands 2001* (pp. 127–138). Amsterdam: John Benjamins.

Hoeksema, Jack & Frans Zwarts (1991). "Some Remarks on Focus Adverbs". *Journal of Semantics, 8*, 51–70.

Jackendoff, Ray (1972). *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Johannessen, Janne Bondi (1998). *Coordination*. New York & Oxford: Oxford University Press.

Kayne, Richard S. (1994). *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.

König, Ekkehard (1991). *The Meaning of Focus Particles: A comparative perspective*. London & New York: Routledge.

Krifka, Manfred (1992). "A Compositional Semantics for Multiple Focus Constructions". In J. Jacobs (Ed.), *Informationsstruktur und grammatik* (pp. 17–53). Opladen: Westdeutscher Verlag.

Larson, Richard (1985). "On the Syntax of Disjunction Scope". *Natural Language and Linguistic Theory, 3*, 217–264.

McCawley, James (1981). *Everything that Linguists Have Always Wanted to Know about Logic (But were ashamed to ask)*. Oxford: Blackwell.

Neijt, Anneke (1979). *Gapping: A contribution to sentence grammar*. Dordrecht: Foris.

Poe, Edgar Allan. *Selected Works*.

Rooth, Mats (1985). *Association with Focus*. Ph.D. dissertation, University of Massachusetts, Amherst.

Rooth, Mats & Barbara Partee (1982). "Conjunction, Type Ambiguity and Wide Scope Or". In D. Flickenger, M. Macken, & N. Wiegand (Eds.), *Proceedings of the First West Coast Conference on Formal Linguistics*. Stanford: Stanford University.

Rullmann, Hotze (to appear). "A Note on the History of *Either*". *CLS, 38*.

Sag, Ivan, Gerald, Gazdar, Thomas, Wasow, & Weisler, Steven (1985). "Coordination and How to Distinguish Categories". *Natural Language and Linguistic Theory, 3*, 117–171.

Schwarz, Bernhard (1999). "On the Syntax of *Either...or*". *Natural Language and Linguistic Theory, 17*, 339–370.

Schwarzschild, Roger (1996). *Pluralities*. Dordrecht: Kluwer.

Simons, Mandy (2001). "Disjunction and Alternativeness". *Linguistics and Philosophy, 24*(5), 597–619.

Taglicht, Josef (1984). *Message and Emphasis. On focus and scope in English*. Longman: London & New York.

Winter, Yoad (1998). *Flexible Boolean Semantics: Coordination, plurality and scope in natural language*. Ph.D. dissertation, University of Utrecht.

Zimmermann, Thomas Ede (2000). "Free Choice Disjunction and Epistemic Possibility". *Natural Language Semantics, 8*, 255–290.

Information structure meets Minimalist syntax*

On argument order and case morphology in Bavarian

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1. Introduction

It is still an open question whether and, if so, how deep discourse-pragmatic phenomena are rooted in syntax proper. In this paper, I will propose a division of labour between the syntactic and pragmatic components of language which is fully in line with standard assumptions of the Minimalist Program (Chomsky 1995, 2000, 2001), yet allows for pragmatic consequences. Though movement within core syntax is not triggered by the needs of information structure, the core computational operations (can) produce syntactic derivations which serve informational demands as well. In other words, pragmatics does not constrain and govern syntax (as functionalists assume), but pragmatically 'well-formed' derivations arise from syntactic operations as side effects. It is further argued that the extent to what pragmatics and syntax are intertwined may differ among languages, crucially depending on morphology, which plays another role within Minimalist syntax as commonly assumed.

This article will (i) focus on the interplay of case morphology and (relatively) free word order in Middle Bavarian and (ii) derive some theoretical consequences regarding the relation between information structure and narrow syntax in the Minimalist sense (Chomsky 2001). Two types of scrambling movements will be investigated: (i) scrambling of a definite direct object to the left of an indefinite indirect object; (ii) focus scrambling. The main claim will be that the first type, which seems at first to be informationally driven, can be

analyzed as purely feature driven, as conceived within the Minimalist Program (MP). The other type does not fall into the range of narrow syntax. In order to find a way out of the dilemma that the MP is "too strong a theory to do justice to empirical phenomena in such languages as German [etc.]" (Abraham 1997a: 3), I will adopt and develop further Chomsky's (1995: 524f.) distinction between core computational operations and more or less "stylistic" ones.[1] Additionally, the Principle of Strong Morphology (PSM) will be introduced: it claims – in contrast to the Feature Strength Hypothesis (cf. Haegeman 1998) – that strong morphology delays feature checking to Logical Form (LF). It will play a crucial role in explaining the typological difference between free word order languages (like Bavarian or Malayalam) and rigid word order languages (like Dutch or English).

The paper is organized as follows: Sections 2 and 3 briefly sketch the basic facts of case morphology and case syntax in Middle Bavarian, and in Section 4 I will try to derive some theoretical consequences concerning scrambling and the relation between the computational system of the human language faculty and requirements connected with information structure. Section 5 introduces the Principle of Strong Morphology to explain the typological difference between free word order languages and rigid word order ones. In Section 6, data from Malayalam and Chinese are presented showing that the analysis proposed for Bavarian holds for other languages as well.

I will investigate a certain variety of Bavarian spoken in the Bavarian Forest (Weiß 1998 and the literature cited there). With respect to case morphology, this variant is representative at least for Middle Bavarian, spoken in Upper and Lower Bavaria and parts of Austria. Southern Bavarian differs in some important aspects, for instance, because it possesses a prepositional dative marking (cf. Seiler 2002, 2003). This variant will be completely ignored here.

2.   Case system of (Middle) Bavarian

Bavarian – as well as Standard German (Abraham 1997b) – is a V/2 language showing SOV order in embedded sentences, which I take to be its underlying base structure. The (unmarked) SVO order in root sentences is derived via V-C movement (Weiß 1998).

Middle Bavarian exhibits a reduced morphological case system, somewhere between English/Dutch and Standard German. Two aspects are of particular interest for our purpose. First, morphological case marking is marked only on the determiner, whereas nouns are only marked for number. This can

be seen in (1a–b), where the noun *Katz* 'cat' does not exhibit any alternation of form, if it is subject or indirect object, whereas the article forms do. However, as (1c) compared to (1a) or (b) shows, nouns alter their form with respect to number.

(1) a. d'Katz   dringd da Maus   d'Mil   weg
       the cat-NOM drinks the mouse-DAT the milk-ACC away

   b. d'Maus   dringd da Katz   d'Mil   weg
       the mouse-NOM drinks the cat-DAT the milk-ACC away

   c. d'Katzn   dringan de Mais   d'Mil   weg
       the cats-NOM drink   the mice-DAT the milk-ACC away

Second, Middle Bavarian has only two morphologically distinct case forms. The sentences in (1a–c) illustrate the standard case: the structural cases nominative and accusative have collapsed and differ from the oblique case dative. However, there is one exception from this pattern: in masculine singular it is the form of the object cases which is identical and contrasts with the nominative form. Examples are given in (2a, b): note that the verb *help* requires a dative form in Bavarian just as in Standard German.

(2) a. ea hod n'Sepp   ghoifa
       he has the Sepp-DAT helped

   b. ea hod n'Sepp   troffa
       he has the Sepp-ACC met

In Table 1, the case system is summarized schematically, and Table 2 gives the forms of the definite article.

Table 1.

Sg.	masc	fem	neutr	Pl.	M/F/N
Nom	A	A	A		A
Dat	B	B	B		B
Akk	B	A	A		A

Table 2.

Sg.	masc	fem	neutr	Pl.	M/F/N
Nom	*da(r)*	*d*	*s*		*d*
Dat	*(a)n*	*da(r)*	*(a)n*		*(a)n/de*
Akk	*(a)n*	*d*	*s*		*d*

Though the case system of Middle Bavarian is reduced to some extent, it has not yet arrived at the English or Dutch level, since structural and oblique case (at least in the standard case) are always distinguished.

3.   Word order in (Middle) Bavarian

Let us pre–theoretically assume that the primary function of the three cases, viz. NOM–DAT–ACC, is to identify the syntactic functions of subject, indirect object, and direct object. As is known, there is a straightforward relation between case morphology and word order at least in one direction: (some kind of) free word order needs morphological case marking (Holmberg & Rijkhoff 1998: 82; Neeleman & Weerman 1999: 78ff.).[2] That accounts for the fact that Standard German allows for scrambling, but English or Dutch do not.

Bavarian also obeys the mentioned relation between case morphology and word order. It patterns with English and Dutch in distinguishing syntactically between subject and direct object (cf. 3a vs. b), whereas – unlike English or Dutch – the relative order of indirect and direct objects is free. Their ordering can vary due to discourse functions: for instance, the unfocused part precedes the focused one (cf. 3c, d), or definites precede indefinites (3e, f). Hence, Bavarian partly resembles both English/Dutch (subject before object) and Standard German (free order of objects).

(3)   a.   wia   d'Frau   s'Kind   sehgd
              as   the woman-NOM the child-ACC sees
       b.   wia   s'Kind   d'Frau   sehgd
              as   the child-NOM   the woman-ACC sees
       c.   wia'e da Mare   s'Biachl   geem hob
              as-I   the Mary-DAT   the book-ACC given have
       d.   wia'e s'Biachl   da Mare   geem hob
              as-I   the book-ACC   the Mary-DAT given have
       e.   wia's   da Lehrarin   an neia Schüla   vorstäin   woid
              as-she the teacher-DAT a   new pupil-ACC introduce wanted
       f.   wia's   d'Mare   ana Lehrarin   vorstäin   woid
              as-she the Mary-ACC a   teacher-DAT introduce wanted

Of special interest for our concern is the mentioned peculiarity of the Middle Bavarian case system found in masculine singular, where the dative and accusative forms are identical and constrast both with the nominative of the subject. In addition, even the definite and indefinite article forms of dative

and accusative have merged: The form *an Hund* thus corresponds to Standard German *dem/den* as well as to *einem/einen Hund*. The resulting interpretative differences of the IO-DO vs. DO-IO word order are illustrated in (4a) and (4b).

(4) a. wai'e   an Hund   an Knochn   geem hob
         because-I the dog-DAT a   bone-ACC given have
     b. wai'e   an Knochn   an Hund   geem hob
         because-I the bone-ACC the dog-DAT given have

(4a) represents the canonical order indirect before direct object (see below). The interesting point to be made here is that the direct object in the rightmost position can only receive an indefinite interpretation, despite its ambiguous morphology. In order to get a definite interpretation, the direct object must scramble to the left of the indirect object, as in (4b).

To summarize and complete the picture, standard word order in Bavarian can be characterized by the following generalizations: (i) the basic word order is 'subject before indirect before direct object'; (ii) indirect and direct object can or must invert in certain cases. Evidence for the basic order mentioned in point (i) can be drawn from clitic clusters, where the order 'subject before indirect before direct object' is the only possible one, as can be seen in the contrast between (5a) and (5b).[3] Though clitics are not in base position, it is reasonable to suppose that reordering does not occur in their raising up to the Wackernagel position. Therefore, it can be assumed that they replicate the order of their VP-internal base positions. This basic order can be accounted for in a Larsonian double VP structure as in (6), where the indirect object occupies the specifier of the lower VP and the direct object is the complement of V.

(5) a. wai'e'da'n   geem hob
         because-I-you-him given have
     b. *wai'e'n'da   geem hob[4]
         because-I-him-you given have
(6) [$_{vP}$ SU [$_{VP}$ IO [$_{V'}$ DO V]]]

Though in base position the IO precedes the direct one, inversion of both objects is possible or in certain cases even necessary, as mentioned in (ii). This inversion is a type of scrambling, discussed in the following section.

4.   Scrambling and the MP

4.1   Object scrambling: Data

In what follows, I will restrict myself to this 'object scrambling' (Bayer & Kornfilt 1994).[5] There are at least two cases to distinguish, i.e. optional and obligatory inversion of both objects. I will only discuss these two kinds of 'short' scrambling, ignoring other forms of movement classified as scrambling by other authors. The reason for restricting myself to optional and obligatory inversion of both objects is twofold. First, these kinds only involve movement of arguments, which is problematic for a feature checking approach as intended in this paper (Fanselow 2001: 407). Second, both movement operations result in minimally marked or unmarked constructions, respectively.[6] The idea behind this is that movement in MP is a costly operation (as compared to merge) and should hence be avoided as much as possible. On the other hand, some movement seems necessary for checking requirements in the derivation of every sentence. It is furthermore reasonable to distinguish between two kinds of formal features: core and peripheral ones (Chomsky 2000: 108). Core features are, e.g., φ-features, case, EPP, and so on. These features require obligatory, and – in case of being uninterpretable – overt checking. As we shall see, sentences generated by those absolutely necessary movements will be additionally unmarked constructions, as are sentences with obligatorily inverted objects.

Supposing that this is the case, each further movement operation forced by the requirement of checking additional peripheral features not belonging to the features of the core computational system (CS) (e.g., topic or focus), does have – metaphorically speaking – to pay its price: it adds markedness to the resulting construction. In this conception, marked constructions violate economy (as stated by Reinhart 1997, though not exactly in her sense). In the case of optional inverted definite objects, the markedness is only marginal. Though there is a difference in markedness, it is a very small one. Their comparison could probably reveal interesting properties of CS and other mental systems cooperating with it. On the other hand, the greater the difference in markedness, the smaller the significance of the results of comparison will be.

This distinction between movements driven by core features and those driven by peripheral ones has its historical roots in early generative grammar where obligatory and optional transformations have been distinguished (cf. Chomsky 1957: 45). In MP, a similar distinction (i.e. between core computational operations and "stylistic" ones) is still held to be quite real, implying that both do not follow the same principles, the latter might fall within the phono-

logical component (Chomsky 1995: 324f.; Chomsky 2000: 108). The distinction made here corresponds more to the first one (though it is not exactly the same): I assume, for the sake of hypothesis, that some features are such that they must be checked by CS (i.e. overtly or covertly depending on interpretability and morphology), whereas others may or may not be subject to different principles (e.g., fall within the phonological component). It is furthermore reasonable to assume that what counts as a core CS-feature can vary between languages, so that this is an additional source of language variation.

Now let us return to Bavarian again. Consider first obligatory inversion which must take place in the case of an indefinite IO and a definite DO, as the contrast between (7a) and (7b) shows. The unscrambled version in (7b) is ungrammatical, despite the fact that it exhibits the basic order which in turn is fully grammatical, if both objects are either definite or indefinite (8a–c).

(7) a. wia's   d'Mare   ana Lehrarin   vorstäin woid
       as-she the Mary-ACC a   teacher-DAT introduce wanted
    b. *wia's ana Lehrarin   d'Mare   vorstäin woid
       as-she a   teacher-DAT the Mary-ACC introduce wanted

(8) a. wia's   da Lehrarin   an neia Schüla   vorstäin woid
       as-she the teacher-DAT a new pupil-ACC introduce wanted
    b. wia's   da Lehrarin   den neia Schüla   vorstäin woid
       as-she the teacher-DAT the new pupil-ACC introduce wanted
    c. wia's   ana Lehrarin   an neia Schüla   vorstäin woid
       as-she a   teacher-DAT a new pupil-ACC introduce wanted

As W. Abraham (p.c.) rigtly observed, object inversion as in (7a) is not always obligatory. (9) shows that (7b) improves somewhat, when one stresses the noun of the indefinite DP (see Büring 2001: 72f. for a similar example in Standard German).

(9) [?]wia's ana LEHRARIN d'Mare vorstäin woid

Here stressing results in a 'focused predicate reading' of the indefinite, meaning that Mary was introduced to someone whose property of being a teacher is focused. Note that there is a fundamental difference with focus scrambling of definite NPs, as discussed below: focus-scrambled definites escape focus (see also Molnárfi's 2002 concept of antifocus). If we take (9) to involve movement of the indirect object out of VP to a position where a focus feature is checked, it will not be a counter-example to my approach.[7]

Therefore, I take the kind of object scrambling in (7a) to be obligatory in narrow syntax, because the non-inverted version in (9) results in a highly marked construction, indicating that it does not belong to narrow syntax.

However, there are other instances of object inversion which are not obligatory. Consider (10a) and (10b) where both objects are definite and can be ordered freely without yielding ungrammaticality.

(10)   a.   wia's   da   Lehrarin   de neia Sekretärin   vorstäin   woid
              as-she the teacher-DAT the new secretary-ACC introduce wanted
        b.   wia's   de neia Sekretärin   da Lehrarin   vorstäin   woid
              as-she the new secretary-ACC the teacher-DAT introduce wanted

The relative order of the two objects in (10a, b) is determined by focus: in both sentences it is the unfocused (and destressed) part which precedes the focused one (see, among others, Abraham & Molnárfi 2002). Such focus scrambling is not free in the sense that it would have no consequences whatsoever, because it does change the information structure (see Abraham 1995: Ch. 14), I will nevertheless assume that it is optional, since failure to invert does not make the sentence ungrammatical, which is the crucial difference with obligatory inversion (cf. 7b). Note that, as one of the reviewers correctly observes, (10a) can be an all-new sentence, as well, if both objects are unstressed. This primarily shows that the notions 'being unstressed' and 'being unfocussed' are in principle independent of each other (as well as 'being accented' and 'being in focus'). However, it can be taken as further evidence that the IO > DO order, as in (10a), seems to be more 'basic' (in whatever sense) than the DO > IO order, since (10b) hardly admits an all-new reading.

To summarize, we have considered two kinds of object scrambling which differ with respect to obligatoriness: (i) a definite DO must scramble to the left of an indefinite IO; (ii) two definite objects scramble due to their focus values (focus scrambling).[8] However, since indefinites are also part of sentential focus, it looks as if in Bavarian the surface order of the objects is entirely governed by the information structure, requiring unfocused material to precede the focus domain. This picture fits well into current theories of focus à la Cinque (1993), according to which "scrambling is a type of focus construction that moves D-linked material away from a preferred position" (López & Winkler 2000: 645). As Abraham (1995) has shown for German, the D-structurally deepest-embedded lexical constituent carries the normal, unmarked grammatical accent in the clause and is therefore the focus exponent. This holds for Bavarian as well, as we have seen.

4.2 Object scrambling: Explanation(s)

Now the crucial question is how to implement these discourse-functionally driven movements into a theory like the MP. The MP assumes, for instance, that the CS is 'semantically myopic' (Hornstein 1995), and therefore it would be surprising if the CS would be sensitive to discourse functions. The central issue is to explain why definites scramble obligatorily. Since in the MP the driving force for movement is feature checking, one possibility is to propose a focus phrase, say above VP. But this does not work, simply because it is the unmoved object, not the moved one, which carries the focus feature, and even the broadest definition of Lasnik's (1999a) enlightened self -interest would not account for it.[9] A further analysis is to propose that in German as well as in Bavarian there is no scrambling at all, and all possible constituent orders are base generated, as has been sugested by Bayer and Kornfilt (1994) or Fanselow (2001). However, this is in conflict with the rigid order in clitic clusters and with indefinite objects which hardly ever invert. Furthermore, it would not necessarily predict the observed difference between obligatorily and optionally inverted elements.

However, there is an analysis conceivable within the MP which captures the observed facts. All we have to assume is that in Bavarian definite NPs always overtly move to their appropriate AGRPs and indefinites never do so (unless they are interpreted generically or specifically). Instead, indefinites move after Spell-Out to their appropriate AGRPs, where their case feature is checked, so that no problem arises with respect to case theory (and, following Fanselow 2001:417, θ-theory).

The (c)overt contrast between definites and indefinites can be captured, for instance, by proposing that definite NPs carry a feature indefinites lack: since the former are referential and the latter are not, one can assume that only definites carry a D-feature which must be checked before Spell-Out.[10] Another possibility is to propose with Uriagereka (2000b) that non-referential indefinites have only a partial D-feature, therefore being invisible for the feature searching component of CS. This approach explains the different behaviour of definite and indefinite NPs, resulting from a difference in their feature-equipment, clearly remaining within the lines of the MP.

According to this assumption, definite objects are always in a derived position, even when they show the unmarked order indirect before direct object. That means a sentence like (11a) has the structure indicated in (11b). Evidence for this mostly invisible movement comes from quantificational adverbs (like *oft* 'often'), modal particles like *fei* (something like 'perhaps'), or floating quan-

tifers (like *olle* 'all'). Given that they can all occupy varying positions above VP, the fact that they can follow definite objects as in (12a, b, c) is evidence for the latter to have left their VP-internal base positions. On the other hand, in the case of an indefinite object, quantificational adverbs, modal particles (12d) and floating quantifiers (12e) must precede it.

(11)   a.   wia'e   da   Mare   s'Biachl   geem   hob
             as-I   the   Mary-DAT   the book-ACC   given   have
       b.   wia'e [$_{AGRP}$ da Mare$_i$ [$_{AGRP}$ s'Biachl$_j$ [$_{VP}$ t$_i$ t$_j$ geem hob]]

(12)   a.   wai'a   (oft)   am Sepp   (oft)   s'Biar   (oft)
             because-he   (often)   the Joe   (often)   the beer   (often)
             vosteckd   hod
             hidden   has
       b.   wai'a (fei) am Sepp (fei) s'Biar (fei) vosteckd hod
       c.   wai's   (olle)   am Sepp   (olle)   s'Bia   (olle)
             because-they   (all)   the Joe   (all)   the beer   (all)
             vosteckd   hamd
             hidden   have
       d.   wai'a   (oft/fei)   am Sepp   (oft/fei)   a Biar
             because-he   (often/MP)   the Joe   (often/MP)   a beer
             (*oft/*fei)   zoid   hod
             (often/MP)   paid   has
       e.   wai's (olle) am Sepp (olle) a Bia (*olle) zoid hamd

Unlike most authors (cf. Corver & van Riemsdijk 1994b), I don't take the relative order of an adverb and an object necessarily to reveal anything about the objects being scrambled or not. On the contrary, I assume that adverbs can occupy various positions above VP (in accordance with Haider 2000), and that they are left adjoined to VP or to functional projections like both objects AGRPs (the precise nature of their structural implementation does not matter for our purpose). So, in (12a) the positions of the indirect and the direct object do not vary as to whether the adverb precedes or follows. Therefore, the different order of adverb before object vs. object before adverb is not an instance of scrambling in my account. Neeleman and Weerman (1999) also assume that adverbs may be freely inserted in the sentence, yet differ from the analysis presented here in letting adverbs occupy various positions within VP. Their hypothesis does not explain why indefinite objects cannot be separated from the verb by most adverbs.[11]

The syntactic behaviour of modal particles is similar to that of quantificational adverbs. Modal particles are often claimed to mark the VP boundary

in any case (Diesing 1992: 31f.; Fanselow 2001: 408), so that every argument following one has to be VP-internal. At least for Bavarian modal particles like *fei* this seems to be unlikely. Rather, it is likely that they are a kind of focus marker.[12] Consider (13a–d): here *fei* marks non-sentential focus to its left or right in combination with stress, i.e. the constituent immediately preceding or following it is assigned focus depending on stress. It is obvious that this kind of focus marking – like intonational focus assignment (cf. Abraham 1995, 1997b) – does not necessarily reveal anything about base or VP-internal positions. Note especially (13a), where the auxiliary *hod* in C° is assigned focus. Marking the VP boundary, as *fei* in (13d) indeed does, is only a special case.

(13)   a.   dea HOD fei n'Sepp   s'Biar   vosteckd
            he   has   MP   the Joe   the beer   hidden
       b.   dea hod fei n'SEPP   s'Biar   vosteckd
            he   has   MP   the Joe   the beer   hidden
       c.   dea hod n'Sepp   fei s'BIAR vosteckd
            he   has   MP the Joe   the beer   hidden
       d.   dea hod n'Sepp s'Biar   fei VOSTECKD
            he   has   the Joe the beer   MP hidden

The same argument can be made for floating quantifiers. Regardless of their precise account (see Fanselow 2001: 411 and the literature mentioned there), floating quantifiers in Bavarian also seem to be legitimate in various positions above VP. Consider (14) where the object can follow or precede a floating quantifier, but both must precede sentence negation. Sentence negation in Bavarian undoubtly marks the VP boundary (Weiß 1999, 2002a) so that the floating quantifier as well as the object cannot be VP-internal.[13]

(14)   de   hamd (olle) d'Mare (olle) ned   gseng
       they have   all   the Mary   not   seen

Notice that the position of adverbs, modal particles and floating quantifiers is a diagnostic ex negativo. Given that the lowest possible position of these expressions is the left edge of VP, any argument NP which cannot precede them, must be inside VP. That is exactly the case with (existentially interpreted) indefinites: the indefinite DO in (12d, e) cannot scramble to the left of them.

Further evidence for proposing a movement approach for definite NPs comes from focus scrambling. The crucial point is that definite objects can easily focus scramble, as shown in (10a) and (10b) above, whereas indefinite objects seem to resist inversion (cf., e.g., Abraham & Molnárfi 2002), see (15a, b). Note that it is not conceptually clear why this should not be possible. It

is entirely conceivable to make one of two newly introduced discourse refer-
ents salient in an appropriate discourse situation, i.e. to focus it (see, especially,
Büring 2001 and Lenerz 2001 for Standard German).

(15) a. wia'e ana Lehrarin   a Schülarin vorstäin   woid
            as-I   a   teacher-DAT a pupil-ACC introduce wanted
      b. ??wia'e a Schülarin ana Lehrarin vorstäin woid

Admittedly, it is still an open question to me whether indefinite objects can or
cannot invert, and furthermore, whether inversion of indefinites is the same
as inversion of definites (i.e. focus scrambling). Note that it does not pose any
problem for my approach if they actually could invert: since focus scrambling
is a post-CS operation, it would not entail that the direct object in (15b) have
left VP in narrow syntax. Sentences like (15b) are hardly acceptable with focus
on the indirect object (as would be the standard case with definite objects),
but they improve when the direct one bears stress. If that is the correct gen-
eralization, inversion of indefinites would be focus scrambling as defined by
Neeleman (1994). However, judgements on this issue differ: one of the re-
viewers suggests that inversion of VP-internal indefinite objects indicates an
all-rhematic information with all items in contrastive focus. This matter clearly
deserves further investigation.

  Nevertheless, the second kind of scrambling considered here delivers the
illustrative contrast. In my approach, focus scrambling and scrambling of def-
inite DOs to the left of indefinite IOs do not form a natural class (as already
assumed by Bayer & Kornfilt 1994).[14] Whereas the latter is an instance of A-
movement, driven by feature checking, the former is a kind of rearrangement,
presumably XP-adjunction, which takes place after the operations belonging to
the core computational system are completed (cf. Chomsky 1995: 324ff.). And
for this reason, focus scrambling is both optional, as well as resulting in at least
slightly marked constructions (see also Holmberg & Rijkhoff 1998: 82). There-
fore, focus scrambling does not belong to the core computational operations.

4.3 CS and the information structure

One of the most fascinating aspects of the MP is that it attributes an indi-
rect functionality to the CS (Hinterwimmer 2000). Though the CS is "dumb"
(Martin 1999) in the sense that it cannot see whatever semantics or discourse
pragmatics require, it nevertheless derives expressions which are readable by
other mental systems.

This means, for our purpose, that the core computational operations derive representations which could either get a discourse functional interpretation or can be subject to further discourse-functionally driven operations. Take a simple twofold partition of sentences, as assumed by many discourse theories. In discourse representation theory (DRT), we have the partition in a domain of existential closure, the nuclear scope, and a restrictive clause, into which presupposed material is mapped. In accordance with Diesing's (1992) Mapping Theory they can be identified with the VP and the layer of functional projections, respectively. As I hope to have shown above, the distribution of arguments onto both domains can be analyzed as following from core computational operations without recourse to requirements from discourse functions. That the CS-output converges on them is an example of the indirect functionality mentioned above, but discourse-functional demands do not trigger any movement within what Chomsky calls narrow syntax. The bipartite information structure is, in the sense of Chomsky (2001:32), only "a property of the resulting configuration".

Assume, as is standard within MP, that all movements occurring in the course of derivations within narrow syntax are triggered by feature checking. However, their output can be read off by multiple interfaces, where systems of thought which are not part of the CS have access to CS representations.[15] In the standard case, the representation can be read off as delivered by CS without requiring further rearrangements. This is the case in (16), where the DO has moved to the specifier of $AGR_{DO}P$ to get its D-feature checked away.

(16) ea hod [$AGR_{DO}P$ s'Auddo$_i$ [VP ana Bekanndn t$_i$ glieng]]
      he has   the car   an   acquaintance   lent

Neglecting further details (among which movement of V to C°, movement of the subject to SpecCP), this single feature driven movement suffices to derive a well-formed structure for CS as well as for the interface from which the discourse representation (DR) is read off. This is because the definite DO has already moved into the layer of functional projections which corresponds to the restriction at the level of DR. The crucial point is that the DR-structure is the result of an interpretation process: the DR-system only interprets a CS representation, but does not control its derivation. I take it in this sense that information structure is "a property of the resulting configuration" (Chomsky 2001:32).[16]

On the other hand, focus scrambling is an instance of a discourse functionally driven movement which takes place after core computational operations. Post-CS operations can be captured within a minimalist framework, if one

assumes a multiple Spell-Out mechanism (as developed by Uriagereka 1999) which allows rearrangement operations to take place secondarily in addition to CS operations. This is the case in (17a) where the DO has scrambled to the left of the IO.

(17) a.   ea hod s'Auddo am Sepp glieng
           he has the car   the Joe   lent
      b.   ea hod am Sepp s'Auddo glieng
           he has the car   the Joe   lent

Hence, the derivation of (17a) contains one movement operation not triggered by feature checking in narrow syntax, i.e. focus scrambling. The optionality of focus scrambling – cf. (17b) – is evidence for it not being a CS operation. Recall that movement in order to check core CS-features is always obligatory.

This assumption provides a simple and natural explanation of most properties of focus scrambling. Optionality has lead some researchers to propose a base generation account (Bayer & Kornfilt 1994; Neeleman & Weerman 1999; Fanselow 2001) – one that is unnecessary under the present approach. It accounts further for the A-properties of scrambling (Neeleman & Weerman 1999): the structure where scrambling starts off is derived by A-movement. Scrambling being a post-CS rearrangement operation is not A'-movement (as wh-movement). Consequently, there is no possibility of obtaining A'-properties. It also explains why focus scrambling is local (as assumed by Neeleman & Weerman 1999), because it is restricted to the layer of functional I-projections.

Interestingly, rearrangement operations are neither independent of, nor entirely determined by, grammar. After all, focus assignment follows, for example, intonational rules, which are not part of CS. The point of special concern for my purpose is to what extent this is dependent on case morphology. In this respect Bavarian resembles many other languages: if it is possible for the language parser to identify syntactic functions by case morphology, objects can be rearranged according to focus. This is the case in languages as diverse as Icelandic (cf. Holmberg & Rijkhoff 1998: 82) and Malayalam (see Section 6).

5.   The Principle of Strong Morphology

A major issue which seems to be problematic for the present approach is the observable cross-linguistic variation between languages which either allow for scrambling (like Bavarian) or do not (like English). A possible solution could

be the Principle of Strong Morphology (Weiß, in progress). As mentioned above, the CS system (Chomsky 2001) can be thought of as a formal feature detecting system. Moreover, suppose (i) that uninterpretable formal features must be checked before Spell-Out, if they are not morphologically encoded, and (ii) that they can delay checking until LF is reached, if they are. This follows from (18):

(18)   *Principle of Strong Morphology* (*PSM*)
        A [–interpr] feature associated with strong morphology remains inactive in overt syntax

According to Chomsky (2001:3), the universal feature checking mechanism could be conceived of as "a relation Agree holding between α and β, where α has interpretable inflectional features and β uninterpretable ones which delete under Agree". So formal features do always come in pairs of [+/– interpr] versions. Additionally, one member of the pair is associated with a functional category, the other with a lexical item, where the functional category functions as a *PROBE* searching for a *GOAL* with (an) appropriate feature(s) to *match* (see Chomsky 2001 for an explication of these terms). If, e.g., *probe* α detects an item β with a matching feature then checking proceeds through movement either of β (overt movement) or of its feature alone (covert movement). Uninterpretable features have to be checked and deleted as early as possible in the course of derivation, due to the Principle of Full Interpretation. They are like *viruses* (Lasnik 1999b) which a derivation "cannot tolerate" (Chomsky 1995:233). Though both Chomsky and Lasnik are concerned with strong features, I follow here Uriagereka (2000b) who has already transposed the *virus theory* on uninterpretable features, all else being equal.

    In this view, strong morphology makes overt movement for checking demands superfluous. Since morphological strength triggers syntactic behaviour, which is contrary to the one claimed to follow from feature strength, these two cannot be identical.[17] Nevertheless, I think the Principle of Strong Morphology could be a plausible way to avoid the concept of feature strength (as Chomsky 2001 did as well) without the necessity of dispensing with the empirical consequences of Pre- or Post-Spell-Out movement. Furthermore, the Principle of Strong Morphology seems to be a natural addition to the *virus theory* (cf. Lasnik 1999b; Uriagereka 2000b): according to the *virus theory*, uninterpretable features must be checked off via movement before Spell-Out, unless they are deleted – or associated with strong morphology.

    What this all means for our purpose is that in Bavarian (a language with morphological case), the case feature can be checked after Spell-Out, and in

English (a language without morphological case), it must be checked before Spell-Out. On the other hand, the D-feature, being uninterpretable as well as not being morphologically encoded, must be checked before Spell-Out in both languages. Given these assumptions, it follows that there is no syntactic difference between definite and indefinite DPs in English, since indefinite DPs move to their AGRPs just like definite ones because of their morphologically weak case.[18] In contrast, indefinites do not have to raise in Bavarian, since their case features are morphologically strong, i.e. allowing checking after Spell-Out. So the difference between Bavarian and English could be explained on the basis of morphological strength.[19]

Apparently the presence or absence of morphology plays an important role in other grammatical domains as well as in other languages.

In Scandinavian DP syntax (cf. Santelman 1993) there is a phenomenon which seems to show the relevance of the morphological feature strength concept. Take Danish, for example, where definite articles occur post-nominally (19a), explained by N°-to-D° raising. However, noun raising is blocked, if an adjective intervenes between D° and N° (19b): in this case a pre-nominal article is inserted in D° in order to morphologically support the D-feature. Possibly the 'weak' suffixal article needs (DP-internal) checking of the D-feature, hence N°-to-D° raising. The insertion of the strong article, when noun raising is impossible for some reason, could be seen as a last resort mechanism to prevent the derivation from crashing.

(19) a. hus-et
          house-the
      b. det gamle hus
          the old   house

Bavarian DP syntax has a similiar pattern in that it exhibits an alternation between unstressed and stressed articles, showing the same distribution as their Danish counterparts (cf. 20a, b).

(20) a. d'Muadda
          the mother
      b. de guade Muadda
          the good   mother
      c. da (guade) Vadda
          the (good) father
      d. dea guade Mã
          this good   man

Interestingly, in the case of masculine singular where the unstressed article *da* is not clitical, the presence of an attribute does not trigger any difference (cf. 20c), although a stressed form does exist (cf. 20d). This is strong evidence for PSM, since the only difference between (20b) and (20c) is the morphological strength of the article forms.

6. Other languages showing similar properties

As was briefly mentioned above, the phenomena discussed here for Bavarian also occur in other languages to varying extents. Let us consider two of them.

Malayalam, a Dravidian language spoken in South India, is an interesting example, as it exhibits all the same phenomena as shown here for Bavarian, i.e. IO-DO inversion and focus scrambling of definite objects.[20] In Malayalam, an SOV language, the basic word order is IO before DO, since the IO precedes the DO, when both are either definite (21a) or indefinite (21b), or the IO is definite and the DO indefinite (21c). Adverbs are free to precede or follow definite objects (21a), but must precede indefinites (21c).

(21) a. amma   (palappoozhum) kuTTi-kkə (palappoozhum) aa katha
         mother often   child-DAT often   that story
         paranju-koTutt-iTT-untə
         said-gave-PERF-AUX
         'The mother often told the child the story'
      b. Josef oru kuuTTukaaran-ə oru chinakkaaran-e paricayappeTutti
         Josef one friend-DAT   one Chinese-ACC   introduced
         'Joseph introduced a Chinese to a friend'
      c. Josef (palappoozhum) Hans-inə   (palappoozhum) oru beer
         Josef often   Hans-DAT   often   one beer
         (*palappoozhum) waangi-kkoTutt-iTT-uNTə
         often   bought-gave-PERF-AUX
         'Joseph often bought John a beer'

Interestingly, Malayalam shows the same inversion effects as Bavarian. First, when the DO is definite, it must move to the left of an indefinite IO (22a vs. b), so that its D-feature gets checked off. Since Malayalam possesses strong case morphology, there is no case driven overt movement either. Therefore, the indefinite indirect object in (22b) can delay case checking until LF is reached.

(22) a. amma   oru kuTTi-kkə oru mittaa-yi kotutto
         mother one child-DAT one sweet-ACC gave
         'The mother gave a sweet to a child'

  b. amma   aa   mittaa-yi oru kuTTi-kkə kotutto
         mother that sweet-ACC one child-DAT gave
         'The mother gave the sweet to a child'

Second, Malayalam allows for focus scrambling (23a vs. b): a definite DO can scramble to the left of a definite IO which then is in the focus position.

(23) a. Josef director-kk_   secretary-ye   paricayappeTutti
         Josef director-DAT secretary-ACC introduced

  b. Josef secretary-ye   director-kkə paricayappeTutti
         Josef secretary-ACC director-DAT introduced
         'Joseph introduced the secretary to the director'

In sum, Bavarian and Malayalam are similar to a great extent with respect to argument order. This is all the more interesting, since both languages are neither genetically nor areally related.

Even in Chinese, one can find reflexes of the morphological scrambling parameter.[21] Chinese D/NPs appear in two forms, either as bare nominals or as a classifier construction. Assume for the moment that this difference can be analyzed as a weak-strong difference according to our proposal, and consider the sentences in (24).

(24) a. wo mai shu   le
         I   buy book[–def] ASP
         'I bought a book'

  b. wo shu   mai le
         I   book[+def] buy ASP
         'I bought the book'

  c. wo mai yi   ben shu   le
         I   buy one CL book ASP
         'I bought a book'

  d. wo mai zhe ben shu   le
         I   buy that CL book ASP
         'I bought the book'

Since Chinese is a language without any morphological case marking system, it is reasonable to hypothesize that overt checking of the case feature plays no role.[22] Yet, the D-feature can be marked morphologically, namely by way of a classifier construction, or not, hence we can expect a difference of (c)overt

checking. The sentences in (24) meet these predictions: indefinite NPs do not have to move, regardless of weak (24a) or strong (24c) morphology, but definite NPs must raise in the case of weak morphology (24b) and can only remain in base position, when they are morphologically strong (24d).

7. Conclusion

Let us return to languages with case systems and summarize. According to our proposal, languages that do not have distinctive enough case morphology do not display a syntactic difference between definite and indefinite NPs, since the case feature must be checked overtly. This is the case in English, Dutch and the Mainland Scandinavian languages. On the other hand, in languages like Bavarian or Malayalam that have strong case morphology, checking of the case feature can be delayed to LF. Yet what must be overtly checked is the D-feature, hence definite NPs must move and a syntactic difference in (in)definiteness arises in such languages.

As for focus scrambling, its occurrence depends on case morphology as well, since case allows the identification of syntactic functions regardless of their positions. This entails that focus scrambling is allowed in languages with a sufficiently rich case morphology. It is not permitted, however, in languages with weak morphological case. This explains, why focus scrambling occurs, among others, in Bavarian, Icelandic, or Malayalam, but not in Dutch, English, or the Mainland Scandinavian languages (Holmberg 1998: 576ff.).

Languages with weak case morphology permit operations similar to focus scrambling, for example dative shift in Dutch, English, or the Mainland Scandinavian languages, or object shift in the Mainland Scandinavian languages (Platzack 2000).[23] Any such discourse-functionally driven displacement operation, which obeys the movement laws of UG, is dependent on language specific properties. As far as focus scrambling is concerned, it is the richness of case morphology.

Of course, there must be some additional factor(s) governing argument order, as the example of Icelandic shows: although Icelandic has rich case morphology, it does not seem to display the (in)definite dichotomy (judging from the fact that neither Holmberg 1998: 562ff. nor Hróarsdóttir 2000 mention it). It may well be that obligatory V-to-I raising or the VO base structure, both properties of Icelandic in contrast to Bavarian, are such factors (e.g., demanding a different status of AGR features).[24] Mahajan (1994: 324f.) has also proposed that the possibilities of argument shift in a language are related to

verb movement, and according to Haider and Rosengren (1998) scrambling is restricted to OV-languages. As is well known, Scandinavian object shift and inversion of both objects in Icelandic presuppose V-to-I raising (Holmberg 1998: 567; Holmberg & Rijkhoff 1998: 84).[25] Furthermore, there is interesting data from the acquisition of negation in French (Déprez & Pierce 1993: 41) showing that verb raising can trigger subject raising: only in tensed sentences with V-to-I raising, may the subject leave its VP-internal base position resulting in a S-V-Neg pattern. In contrast, subject raising seems never to occur in untensed sentences, as indicated by the Neg-(S)-V-(S) pattern (note that the V-S order is due to the fact that French allows for short movement of the verb, cf. Déprez & Pierce 1993). Therefore, the empirical fact that SOV languages display scrambling, but SVO languages do not, may simply follow from the absence vs. presence of overt V-to-I movement.[26]

Though the precise correlation between verb movement and argument movement has to be investigated to a greater extent in future research, it can be claimed that a simple 1-to-1 correlation between case morphology and freedom of argument order (scrambling) is not likely to exist, because there are additional factors such as V-to-I movement. This result is – at least in one respect – comparable to what recent investigations of the correlation between verbal morphology and movement have revealed: there is no strict link between strong verbal morphology and V-to-I movement either (Ackema 2001; Alexiadou & Fanselow 2002).[27] However, if rich inflection has an impact on verb movement, then it is not compatible with no movement (Alexiadou & Fanselow 2002). This contrasts with rich case morphology which seems to disallow arguments to overtly move for checking requirements. However, I think that these differing results are not necessarily contradictory. It could well be that morphology has different consequences for head and phrasal movement.[28] But that also has to be investigated in future research.

Notes

1. The other way (as pursued by Fanselow 2001) would be to assume a base generation approach and to deny that scrambling exists at all, because it is "incompatible with fundamental assumptions of the Minimalist Program" (Fanselow 2001:405).

2. As one of the reviewers rightly objects, free word order as such (and as opposed to rigid word order of the English type languages) seems not to be strictly correlated to case morphology (Holmberg 1998:574f.). For example, the 'caseless' Afrikaans (Molnárfi 2002) or Bulgarian (Rudin 1985) exhibit word order variation to some extent, though not the kind discussed here.

3. The ordering of object clitics observed in Bavarian seems to be widespread: it occurs in other German dialects like Swiss German (cf. Weiß 1998:90) as well as in most Romance languages and Modern Greek (cf. Gerlach 1998). As one of the reviewer reminds me, Standard German is often held to show the inverse order DO > IO for pronominal and nominal objects (e.g., Müller 1999), or at least for pronominal ones (e.g., Abraham 1997b:29f.), though this is far from being certain (cf. Abraham 1997b:30; Lenerz 2001:252; Weiß 1998:141; and the literature cited there). The picture of clitic ordering is often confused by intervening factors such as that simple clitics (Weiß 1998:103–106) and weak pronouns (Weiß 1998:88–90) can force deviations from the standard order. Granted, it could well be that the matter in general (cf. Uriagereka 1995:107, fn. 64 for French as an exception of the Romance languages), or, at least, in other German and Dutch dialects (cf. Gärtner & Vogel 2000) may not be as straightforward as it is in Middle Bavarian.

4. For one of the reviewers (5b) is acceptable in contexts like (i):

(i) warum moanst   denn iwerhaupt, das'e den Schlissl hom soi
     why   mean-2SG MP   at all,   that-I the key   have should

If this acceptability judgment reveals to be shared by other Bavarian speakers as well, (5b) would not be ungrammatical, but restricted to certain kinds of contexts – in contrast to (5a) which lacks such a contextual restriction. I think even then it would be justified to claim that (5a) and not (5b) repeats the base order.

5. Due to lack of space I cannot discuss existing scrambling theories, cf. Abraham and Molnárfi (2002), Corver and Riemsdijk (1994a), Haider and Rosengren (1998), Lenerz (2001), Mahajan (1994), Molnárfi (2002), Müller (1999), Neeleman and Weerman (1999), Fanselow (2001) among many others.

6. Following Höhle (1982), markedness is understood as connected to focus: unmarked constructions are those which have maximal focus (and clausal accent, cf. Abraham 1995, 1997b), whereas markedness is correlated to non-maximal focus. Under this assumption, unmarked orders are not identical with base-generated (or D-structure) orders. See also Müller (1999:782), or Lenerz (2001:252).

7. Sentences like (i) and (ii) which seem to be acceptable for some native speakers of Austrian-Bavarian (as one of the reviewers has brought to my attention) require another explanation.

(i) ?wia's ana Lehrarin d'MARE vorstäin woid

(ii) ??wia's ana Lehrarin d'Mare vorstäin woid

Since the indefinite DP is existentially interpreted, there is no need to assume any movement out of VP for both objects, regardless of whether the direct object is assigned contrastive stress or not. Büring (1994:88ff.) provides an explanation for non-scrambled, but stressed definites in accordance with Diesing's (1992) assumptions so that (i) does not seem to be a real counter-example to my approach. Speakers for which sentences like (ii) are acceptable may be influenced by Standard German which does not exhibit the (in)definiteness contrast as rigidly as Bavarian does. Cf. Weiß (2001) on the restricted relevance of standard languages for linguistic research.

8. In Neeleman's and Weerman's (1999:78ff.) terms 'scrambling across arguments'. Note that the term focus scrambling as defined here is not used in the sense of Neeleman (1994:396ff.) where it means movement of focused material.

9. To circumvent this problem, Molnárfi (2002) proposes an analysis where movement is driven by an antifocus feature. Though it would be very interesting, I cannot discuss the antifocus concept due to lack of space. Possibly, there are ways conceivable to accommodate the analysis presented here and Molnárfi's antifocus, if restricted to focus scrambling as defined above.

10. This account is admittedly against the spirit of Chomsky's (1995) feature checking theory in which a (functional) category with an uninterpretable feature attracts some matching feature into its checking domain. In the case concerned here it must be the D-feature of the moving item which needs checking, otherwise derivations without definites would inevitably crash at LF. But this modification assumed here is necessary for other cases as well, e.g., wh-movement for which Chomsky (2000:107, and elsewhere) assumes that it is the wh-phrase that bears the uninterpretable feature, DP-internal concord (cf. Carstens 2000) or negative concord constructions (cf. Weiß 2002a, b). See Lasnik (1999b) for a more general discussion of this issue.

11. Neeleman's and Weerman's (1999) analysis is only correct for manner adverbs, which can separate an indefinite object from the verb in Bavarian as well, cf. (i). Manner adverbs can presumably be generated VP-internally. Yet, temporal or quantificational adverbs are not allowed to intervene between an indefinite object and the verb, cf. (ii).

(i)   wai   da Hans a Biachl langsam glesn hod
      because the John a book   slowly   read has

(ii) *wai   da Hans a Biachl gesdan/oft   glesn hod
      because the John a book   yesterday/often read has

12. The basic function of *fei* is traditionally characterized as introducing new and/or important information, often in conjunction with special attitudes of the speaker (see Glaser 1999:173–178). According to Abraham and Conradie (2001:112), modal particles in SOV languages mark the border between the domains of thema and rhema.

13. As (14) additionally shows, sentence negation supplies a fourth argument for the movement account of definite arguments presented here, but in a slightly more complex way (see Weiß 1999, 2002a).

14. This assumption is also confirmed by other languages, e.g., Icelandic: it allows inversion of two nominal objects, but does not display the (in)definite dichotomy, see also Section 5.

15. There are some proposals for more than just two interface levels (see Platzack 2000; or Uriagereka 2000a). My own proposal corresponds to them in spirit, though not in detail.

16. Abraham (1997b) proposes that functional categories are contentful (i.e. bearing feature like [+/– thematic]) from the start, so that they can trigger 'informationally driven' movements. In the approach advocated here, such features can be associated with functional categories in languages like German. However, they only play a role in secondary interpretional processes as well as in rearrangement operations like focus-scrambling, but not in deriving a CS-representation.

17. Though it is common to relate feature strenth to rich morphology (e.g., Haegeman 1998), there are exceptions like van Gelderen (1997) who also argues for keeping both types of strength distinct. According to Holmberg (1998: 592, fn. 16), "the postulation of strong or weak features has provided little more than another name for obligatory movement".

18. See Lasnik (1999a: 141) for the proposal that in English the object overtly moves to its AGRP "with V raising to a still higher head position".

19. The Principle of Strong Morphology is thought of as an addition to Chomsky's (2001) Phase and Uriagereka's (1999) multiple Spell-Out (though admittedly it has to be worked out in greater detail).

20. Many thanks to Hany Babu who informed me about the Bavarian-Malayalam parallels and who supplied me with the data on which the following is based. See also Hany Babu (in progress).

21. Many thanks to Lyih-Peir Luo for supplying me with Chinese data.

22. Note that if this is correct, the fact that any 1-to-1 correlation between case system and flexible/rigid word order fails (as mentioned in Holmberg 1998: 574) is no a counter-argument.

23. According to Holmberg (1998: 576ff.), Scandinavian object shift depends on case morphology, too. In Mainland Scandinavian, object shift is restricted to pronouns, whereas in Icelandic it applies to all NPs. Icelandic object inversion seems to be identical with focus scrambling as discussed here, i.e. the DO > IO order requires focus on the IO (Holmberg 1998: 577).

24. Icelandic further differs from Bavarian in that it lacks obligatory definite and indefinite articles (Holmberg 1998: 593, fn. 24). This also may contribute to different checking requirements.

25. Inversion of both objects in Icelandic as in (i) vs. (ii) (from Holmberg 1998: 577) shows that at least some kind of scrambling is not restricted to SOV languages.

(i)   Hun gaf Kjartani   bókina
       She gave Kjartan-DAT book-DEF-ACC

(ii)   Hun gaf bókina Kjartani

26. For Abraham and Molnárfi (2002: 23), the crucial property of SOV languages is the existence of a "structural space [the Middlefield] for identifying discourse functional relations as *thema* and *rhema*", which SVO languages lack. Under the present approach, the empirical

fact that the visible syntax in SOV languages is more discourse-functionally shaped as in SVO languages, is a kind of epiphenomenon.

27. Thanks to one of the reviewers for insisting on the connection between verbal and nominal morphology which I should take in account in future research.

28. Inflectional affixes are often fusional, e.g., bearing AGR and tense features which corresponds to distinct functional heads. Bobaljik (1997) has shown that this imposes restrictions on the projection of functional projections as well as on V-movement.

References

Abraham, Werner (1995). *Deutsche Syntax im Sprachvergleich: Grundlegung einer typologischen Syntax des Deutschen.* Tübingen: Narr.

Abraham, Werner (1997a). "Minimalism: Why it is not the end of syntax". In Abraham & van Gelderen (1997), 3–9.

Abraham, Werner (1997b). "The Base Structure of the German Clause under Discourse Functional Weight: Contentful functional categories vs. derivative functional categories". In Abraham & van Gelderen (1997), 11–42.

Abraham, Werner & Elly van Gelderen (Eds.). (1997). *German: Syntactic Problems – Problematic Syntax.* Tübingen: Niemeyer.

Abraham, Werner & C. Jac Conradie (2001). *Präteritumschwund und Diskursgrammatik.* Amsterdam & Philadelphia: Benjamins.

Abraham, Werner & László Molnárfi (2002). "The German Clause Structure under Discourse Functional Weight: Focus and antifocus". In Werner Abraham & C. Jan-Wouter Zwart (Eds.), *Issues in Comparative German(ic) Typology* (pp. 1–43). Amsterdam & Philadelphia: Benjamins.

Ackema, Peter (2001). "On the Relation between V-to-I and the Structure of the Inflectional Paradigm". *The Linguistic Review, 18*, 233–263.

Alexiadou, Artemis & Gisbert Fanselow (2002). "On the Correlation between Morphology and Syntax: The case of V-to-I". In Werner Abraham & C. Jan-Wouter Zwart (Eds.), *Issues in Comparative German(ic) Typology* (pp. 219–242). Amsterdam & Philadelphia: Benjamins.

Bayer, Josef & Jacqueline Kornfilt (1994). "Against Scrambling as an Instance of Move-alpha". In Corver & van Riemsdijk (1994a), 17–60.

Bobaljik, Jonathan David (1997). "If The Head Fits ...: On the morphological determination of Germanic syntax". *Linguistics, 35*, 1029–1055.

Büring, Daniel (1994). "Mittelfeldreport". In Brigitte Haftka (Ed.), *Was determiniert Wortstellungsvariation: Studien zu einem Interaktionsfeld von Grammatik, Pragmatik und Sprachtypologie* (pp. 79–96). Opladen: Westdeutscher Verlag.

Büring, Daniel (2001). "What Do Definites Do That Indefinites Definitely Don't?". In Caroline Féry & Wolfgang Sternefeld (Eds.), *Audiatur Vox Sapientiae: A Festschrift for Arnim von Stechow* (pp. 70–100). Berlin: Akademie Verlag.

Carstens, Vicki (2000). "Concord in Minimalist Theory". *Linguistic Inquiry, 31*, 319–355.

Chomsky, Noam (1957). *Syntactic Structures.* The Hague & Paris: Mouton.

Chomsky, Noam (1995). *The Minimalist Program.* Cambridge, MA & London: MIT Press.

Chomsky, Noam (2000). "Minimalist Inquiries: The framework". In Roger Martin, David Michaels, & Juan Uriagereka (Eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik* (pp. 89–155). Cambridge, MA: MIT Press.

Chomsky, Noam (2001). "Derivation by Phase". In Michael Kenstowicz (Ed.), *Ken Hale: A Life in Language* (pp. 1–52). Cambridge, MA: MIT Press.

Cinque, Guglielmo (1993). "A Null Theory of Phrase and Compound Stress". *Linguistic Inquiry, 24*, 239–297.

Corver, Norbert & Henk van Riemsdijk (Ed.). (1994a). *Studies on Scrambling: Movement and Non-Movement Approaches to Free Word-Order Phenomena.* Berlin & New York: Mouton de Gruyter.

Corver, Norbert & Henk van Riemsdijk (1994b). "Introduction: Approaches to and properties of scrambling". In Corver & van Riemsdijk (1994a), 1–15.

Déprez, Viviane & Amy Pierce (1993). "Negation and Functional Projections in Early Grammar". *Linguistic Inquiry, 24*, 25–67.

Diesing, Molly (1992). *Indefinites.* Cambridge, MA & London: MIT.

Fanselow, Gisbert (2001). "Features, θ-Roles, and Free Constituent Order". *Linguistic Inquiry, 32*, 405–437.

Gärtner, Hans-Martin & Markus Steinbach (2000). "What do Reduced Pronominals Reveal about the Syntax of Dutch and German?" In Hans-Martin Gärtner (Ed.), *Two Papers on Clitics* (pp. 7–62). Potsdam: Univ.-Bibliothek, Publikationsstelle.

van Gelderen, Elly (1997). "Inflection and Movement in Old English". In Abraham & van Gelderen (1997), 71–82.

Gerlach, Birgit (1998). *Optimale Klitiksequenzen.* Theorie des Lexikons. Arbeiten des Sonderforschungsbereichs 282. Nr. 103. Heinrich Heine Universität Düsseldorf.

Glaser, Elvira (1999). "Funktion und Verbreitung der Partikel *fāi*". In Herbert Tatzreiter, Maria Hornung & Peter Ernst (Eds.), *Erträge der Dialektologie und Lexikographie* (pp. 165–190). Wien: Edition Praesens.

Haegeman, Liliane (1998). "V-Positions and the middle field in West Flemish". *Syntax, 1*, 259–299.

Haider, Hubert (2000). "Adverb Placement: Convergence of structure and licensing". *Theoretical Linguistics, 26*, 95–134.

Haider, Hubert & Inger Rosengren (1998). "Scrambling". *Sprache und Pragmatik, 49*, 1–104.

Hany Babu, M. T. (2000). "What the Indefinites Tell us about Clause Structure: Evidence from Malayalam". Talk presented at the conference Generative Grammatik des Südens, Potsdam.

Hany Babu, M. T. (in progress). Quantification and Clause Structure in Malayalam.

Hinterwimmer, Stefan (2000). Kritische Untersuchung des Minimalistischen Programms hinsichtlich seines Potentials zur Überwindung der Trennung von Formaler und Funktionalistischer Linguistik. Magister thesis, University of Regensburg.

Holmberg, Anders (1998). "Word Order Variation in some European SVO Languages: A parametric approach". In Anna Siewierska (Ed.), *Constituent Order in the Languages of Europe* (pp. 553–598). Berlin & New York: Mouton de Gruyter.

Holmberg, Anders & Jan Rijkhoff (1998). "Word Order in the Germanic Languages". In Anna Siewierska (Ed.), *Constituent Order in the Languages of Europe* (pp. 75–104). Berlin & New York: Mouton de Gruyter.

Hornstein, Norbert (1995). *Logical Form: From GB to Minimalism.* Cambridge, MA & London: MIT Press.

Höhle, Tilman N. (1982). "Explikation für normale Betonung und normale Wortstellung". In Werner Abraham (Ed.), *Satzglieder des Deutschen* (pp. 75–153). Tübingen: Narr.

Hróarsdóttir, Thorbjörg (2000). *Word Order Change in Icelandic: From OV to VO.* Amsterdam & Philadelphia: Benjamins.

Lasnik, Howard (1999a). *Minimalist Analysis.* Oxford: Blackwell.

Lasnik, Howard (1999b). "On Feature Strength: Three Minimalist approaches to overt movement". *Linguistic Inquiry, 30*, 197–217.

Lenerz, Jürgen (2001). "Word Order Variation: Competition or co-operation?". In Gereon Müller & Wolfgang Sternefeld (Eds.), *Competition in Syntax* (pp. 249–281). Berlin & New York: de Gruyter.

López, L. & Susanne Winkler (2000). "Focus and Topic in VP-Anaphora Constructions". *Linguistics, 38*, 623–664.

Luo, Lyih-Peir (1999). *Studien zu seriellen Verbkonstruktionen: Ihre Syntax und Semantik im Chinesischen.* Tübingen: Niemeyer.

Mahajan, Anoop (1994). "Toward a Unified Theory of Scrambling". In Corver & van Riemsdijk (1994a), 301–330.

Martin, Roger (1999). "Case, the Extended Projection Principle, and Minimalism". In Samuel D. Epstein & Norbert Hornstein (Eds.), *Working Minimalism* (pp. 1–25). Cambridge, MA & London: MIT Press.

Molnárfi, László (2002). "Focus and Antifocus in Modern Afrikaans and West-Germanic". *Linguistics, 40*, 1107–1160.

Müller, Gereon (1999). "Optimality, Markedness, and Word Order in German". *Linguistics, 37*, 777–818.

Neeleman, Ad (1994). "Scrambling as a D-Structure Phenomenon". In Corver & van Riemsdijk (1994a), 387–429.

Neeleman, Ad & Fred Weerman (1999). *Flexible Syntax. A Theory of Case and Arguments.* Dordrecht, Boston & London: Kluwer.

Platzack, Christer (2000). "Multiple Interfaces". Ms., University of Lund.

Reinhart, Tanya (1997). "Interface Economy: Focus and markedness". In Chris Wilder, Hans-Martin Gärtner, & Manfred Bierwisch (Eds.), *The Role of Economy Principles in Linguistic Theory* (pp. 146–169). Berlin: Akademie Verlag.

Rudin, Catherine (1985). *Aspects of Bulgarian Syntax: Complementizers and Wh Constructions.* Columbus, OH: Slavica Publishers.

Santelmann, Lynn (1993). "The Distribution of Double Determiners in Swedish: *den* support in D°". *Studia Linguistica, 47*, 154–176.

Seiler, Guido (2002). "Prepositional Dative Marking in Upper German: A case for syntactic microvariation". In Sjef Barbiers, Leonie Cornips, & Susanne van der Kleij (Eds.), *Syntactic Microvariation* MIEPiL Vol. II, (pp. 243–279). (http://www.meertens.nl/books/synmic)

Seiler, Guido (2003). *Präpositionale Dativmarkierung im Oberdeutschen.* Stuttgart: Steiner.

Uriagereka, Juan (1995). "Aspects of the Syntax of Clitic Placement in Western Romance". *Linguistic Inquiry, 26*, 79–123.

Uriagereka, Juan (1999). "Multiple Spell-Out". In Samuel D. Epstein & Norbert Hornstein (Eds.), *Working Minimalism* (pp. 251–282). Cambridge, MA & London: MIT Press.

Uriagereka, Juan (2000a). In Defense of Deep-Structure, Ms., University of Maryland.

Uriagereka, Juan (2000b). Comments on N. Chomsky's Derivation by Phase. Ms., University of Maryland.

Weiß, Helmut (1998). *Syntax des Bairischen. Studien zur Grammatik einer natürlichen Sprache.* Tübingen: Niemeyer.

Weiß, Helmut (1999). "Duplex Negatio Non Semper Affirmat: A theory of double negation in Bavarian". *Linguistics, 37*, 819–846.

Weiß, Helmut (2001). "On Two Types of Natural Languages: Some consequences for linguistics". *Theoretical Linguistics, 27*, 87–103.

Weiß, Helmut (2002a). "Three Types of Negation: A case study in Bavarian". In Sjef Barbiers, Leonie Cornips, & Susanne van der Kleij (Eds.), *Syntactic Microvariation* MIEPiL Vol. II (pp. 305–332). (http://www.meertens.nl/books/synmic)

Weiß, Helmut (2002b). "Indefinite Pronouns: Morphology and syntax in cross-linguistic perspective". In Horst Simon & Heike Wiese (Eds.), *Pronouns: Grammar and Representation* (pp. 85–107). Amsterdam & Philadelphia: Benjamins.

Weiß, Helmut (in progress). The Principle of Strong Morphology.

Focus particles, sentence meaning, and discourse structure

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1. Introduction[1]

Semantic theories of information structure (von Stechow 1982; Jacobs 1983; Rooth 1985; Krifka 1991) assume a partition of the sentence into (at least) two disjunctive informational units. They play a crucial role in the interpretation of a sentence with respect to its felicity conditions and to its presuppositional meaning. Furthermore, they serve as arguments for focus particles. The sentence meaning is compositionally derived from the meanings of the informational units and focus operators. I show that this view of information structure as a partition of a sentence leads to severe problems with the compositional process in more complex cases. I then argue that information structure must be represented by two overlapping units, rather than by two disjunctive ones. The *foreground*-unit corresponds to the whole sentence, and the *background*-unit corresponds to the whole sentence minus the focused expressions. These two units differ with respect to their contributions and with respect to their interaction with the established discourse representation. Evidence for the Foreground-Background Semantics is gained from an in-depth analysis of the interpretation of focus particles and adverbs of quantification.

In semantic descriptions of information structure, it is assumed that the sentence is divided into two components, the focus *F*, and the background *B*. The focus is often intonationally marked by a pitch accent and it is said to express the "new information". Following the usual convention, I set the expression with the pitch accent in small caps and index them by the focus feature *F*. Below, I discuss three constructions (constituent questions, contrastive fo-

cus, and focus particles) that involve the focus-background partition. I then present two problems for this view.

The traditional test for the focus-background structure of a sentence consists in a constituent question and its felicitous answer, (1a–b).

(1)   a.   Who did Sam talk to?
           presupposition: Sam talked to someone.
      b.   Sam talked to FRED$_F$.
Background:	Sam talked to x.
Focus:	Fred
ordinary meaning:	Sam talked to Fred = $\mathbf{B}(\mathbf{F})$
presupposition:	Sam talked to someone = $\exists x\,\mathbf{B}(x)$
felicity conditions:	The sentence is uttered felicitously if its presupposition matches with the presupposition of the question.

Sentence (1b) can be understood as a felicitous answer to question (1a) because its background *Sam talked to x* matches the presupposition of the question, while its focus *Fred* corresponds to the constituent that was asked for. The background meaning is formed by subtracting the focus from the full sentence meaning and by replacing the focus expression with a variable. The ordinary meaning of sentence (1b) is the combination of background and focus, while the presupposition is formed by existentially quantifying the variable of the background. The presupposition triggered by the focus in (1b) corresponds to the presupposition triggered by the constituent question in (1a). This observation motivates the view that the background expresses given or presuppositional information, while the focus provides the new information. The focus-background partition-aspect of information structure was taken up by the theory of Structured Meanings (see Section 3.1).

The contrastive focus FRED in (2) is uttered without a corresponding constituent question. The focused expression is understood to express some contrast to other possible referents.[2] This is an instance of contrastive focus which motivates a semantics of focus (and of information structure in general) in terms of alternatives (see Section 3.2 for Alternative Semantics). Here the function of the focus is invoking alternatives to the focused phrase. A sentence with a contrastive focus is uttered felicitously if there are alternatives to the focused expressions that could have replaced the focused expression in the given context, but actually did not.

(2)   Sam talked to Fred_F. (but not to Mary, John, Tim, ...)
    Background: Sam talked to x.
    Focus: Fred
    felicity conditions: The sentence is uttered felicitously if there are
                        alternatives to Fred such that Sam might have talked
                        to them.

Focus particles also show truth-conditional effects with different focus-background structures. They play an important role in the assumption that information structure is best understood in terms of a dichotomy of the sentence. Focus particles like *only, even,* and *also* are interpreted as operators that take two arguments: focus *F* and background *B*. In (3a) below, the focus particle *only* associates with the focus *Fred*. It is interpreted as an operation that is true if there is no alternative *x* with respect to Fred such that Sam had talked to *x*. The presupposition is that Sam talked to Fred. We can either paraphrase the presupposition and the assertion as in (3b), or represent them by the quasi-formalization in (3c), where "$\approx$" means "similar, but not identical".

(3)   a.   Sam only talked to Fred_F.
        Background: Sam talked to x.
        Focus: Fred
    b.   presupposition: Sam talked to Fred.
        assertion: *Nobody but* Fred *is such that* Sam talked to him.
    c.   presupposition: $\mathbf{B(F)}$
        assertion: For all $x \approx \mathbf{F}$: $\neg\mathbf{B}(x)$

The main proposal of this paper is to provide an alternative mechanism to focus-semantics. The proposed Foreground-Background Semantics differs from both Structured Meanings and Alternative Semantics. It is representational like Structured Meanings, but it does not assume a dichotomy of the representational units. It composes the foreground and background in parallel, similar to Alternative Semantics, but it does not assume two denotational levels.

    I motivate this new semantics by two observations: First, I show that adverbs of quantification, another class of focus sensitive expressions, take as their arguments not *F* and *B*, but rather the whole sentence (the *foreground*) and the *background*. Second, I present evidence that the assumption of a division of a sentence into two disjunctive parts raises problems for the composition of the sentence meaning. Adverbs of quantification are focus sensitive expressions, as can be seen from the difference between (4a) and (5a), where the adverb of quantification associates with different arguments.

(4) a. Sam usually invites Fred to the MOVIES$_F$.
      B: Sam invites Fred to x.
      F: movies

(5) a. Sam usually invites FRED$_F$ to the movies.
      B: Sam invites x to the movies.
      F: Fred

Both sentences compare two sets of time points or intervals for which a certain restriction holds. In (4a) the restriction concerns the places Sam invites Fred to, while in (5a) it concerns the persons Sam invited to the movies. Sentence (5a) can be paraphrased by (5b), where it becomes clearer that the main assertion is that the times Sam takes Fred to the movies constitutes more than half of all times at which Sam took someone to the movies (see Rooth 1985). Again, we can construct the focus and the background out of the whole sentence. However, the operator *MOST* for the expression *usually* compares two sets of times t. The first set is characterized by the background information, while the second is characterized by the whole sentence or the conjunction of focus and background.

(5) b. For most times at which Sam invites someone to the movies, he invites Fred to the movies.
      c. MOST(**t: ∃x t holds in B(x)**) (**t: t holds in B(F)**)

The second observation concerns the assumption that focus particles always take the focus and the background as their arguments. This assumption runs into problems if the focused phrase is not a simple proper name (as in most illustrations of focus theories), but rather a modifier, as in (6a). If we apply the semantics of *only* described in (3b) and (3c) to (6a), we get (6b), (6c) and (6d). The definite article is represented by the iota-operator "ι" expressing the uniqueness condition.

(6) a. Sam only talked to the SWISS$_F$ artist.
      B: Sam talked to the X artist.
      F: Swiss
      b. pres.: Sam talked to the Swiss artist.
       ass.: *Nothing but* Swiss *is such that* Sam talked to the (unique) X artist.
      c. only(**F, B**) is translated into: Sam talked to the Swiss artist and for all X ≈ Swiss: it is not the case that Sam talked to ιz[X(z) & artist(z)].
      d. Sam talked to the SWISS artist, but not to the GERMAN artist and not to the AMERICAN artist and not to the ITALIAN artist.

However, the interpretation excludes too many alternatives, namely all those artists that are not unique with respect to their nationality. Given the situation that Sam talked to the Swiss artist and to one of the two German artists, the theory predicts the sentence to be true, since the one German artist is not in the alternative set to *the* Swiss artist (due to the violation of the uniqueness condition for definite NPs). Contrary to this prediction, we intuitively quantify over artists and assert that there is no artist other than the Swiss artist such that Sam talked to him or her, as paraphrased in (7a) and represented in a quasi-formula in (7b).

(7) a. No artist but the Swiss artist is such that Sam talked to him or her.
     b. for all $x \in$ **artist**' & $x \neq \iota z[$**Swiss**'(z) & **artist**'$(z)]$: it is not the case that Sam talked to x

The discussion shows that the semantics of focus sensitive expressions like focus particles or adverbs of quantification plays an important role in the discussion of the nature of informational units. In particular, the discussion of the last two examples strongly suggests that the informational units are the representations of the background and the representation of the whole sentence, rather than a partition into focus and background.

     To summarize this informal discussion, the commonly accepted view of information structure makes the assumptions listed in (8), while I adopt the opposite assumptions listed in (9).

(8) *Common assumptions of information structure*
     (i)   Information structure is to be defined with respect to the *sentence.*
     (ii)   Information structure is the partition of the sentence into *focus* and *background.*
     (iii) Focus expresses new information, while the background refers to old or given information.
     (iv)   The sentence meaning can be constructed by composition of the meaning of the focus and that of the background ($||S|| = ||B||(||F||)$).
     (v)   A focus sensitive particle is translated into an operator *O* that takes the focus and the background as its arguments ($O(F,B)$).
     (vi)   An adverb of quantification is translated into an operator *Adv* that takes the background and the whole sentence meaning as its arguments ($Adv(B,B+F)$).

(9) *Assumptions of Foreground-Background Semantics*
     (i)   Information structure is to be defined with respect to *discourse.*

(ii)   Information structure is realized as two representations: the *foreground* representation corresponding to the whole sentence, and the *background* representation.

(iii)   It is the whole sentence that expresses new information (rather than one word or one constituent); so the *foreground* representation expresses the new information; the *background* representation is discourse-anchored and therefore contains old or given information.

(iv)   Sentence meaning is compositionally formed from the meaning of its parts according to the syntactic structure and the compositional rules of semantics, rather than in terms of information structure.

(v)   A focus sensitive particle is translated into an operator *O* that takes the foreground and the background as its arguments (O(*background*, *foreground*)).

(vi)   An adverb of quantification is translated into an operator *Adv* that takes the foreground and the background as its arguments (Adv(*background*, *foreground*)).

To summarize, I assume that the two relevant informational units are the background and the foreground, rather than the focus and the background.[3] I will present three arguments in favor of my view: First I show that the traditional dichotomy of the sentence into focus and background is not feasible for conceptual, methodological, and epistemological reasons. Second, I argue that the traditional view leads to problems in the analysis of associations with focus. And third, I argue that the accepted analysis of adverbs of quantification already supports the new view.

The remainder of the article is organized as follows: In Section 2, I present some traditional concepts of information structure and argue that they all are defective since they essentially refer to the informal concept of subject-predicate structure. This was the only available concept of sentence structure at the time when information structure was first discussed. However, the subject-predicate structure is itself not well defined. In Section 3, I present the two most prominent semantic theories of focus. The Structured Meanings approach assumes a division of the sentence meaning in terms of Frege's functor-argument structure, while Alternative Semantics introduces a new denotation, the so called "alternative meaning". In Section 4, I show that both approaches have problems with the compositionality of more complex instances of association with focus, e.g. with modifiers in definite NPs. In Section 5, I give a very short introduction to some of the ideas of discourse semantics. Discourse semantics provides us with a new conceptual framework that allows us to describe infor-

mation structure in a more adequate way. In Section 6, I sketch my new approach of *Foreground-Background Semantics*, based on the discourse semantics developed so far. In Section 7, I provide a summary of the paper.

2.   The conceptual background of the information dichotomy

In the 18th century, linguists began to account for the traditional and purely descriptive subject-predicate structure of sentences in terms of syntax. The more this structure was syntactically reconstructed, the more aware linguists became of the fact that there is a residue that is not captured by syntactic description. In particular, the presentation of the content of a sentence did not always correspond to the syntactic constituents. Therefore, additional structure of the sentence was introduced, referred to by different terminology, but always understood as additional subject-predicate structure. The theoretical basis for this additional structure varies according to the background theory of the researcher. For example, von der Gabelentz (1869) introduced the pair *psychological subject – psychological predicate*, based on his view that psychology is the ultimate basis for language structure. This was taken up by Paul (1880) and others. Ammann (1925) and subsequently, the Prague School (documented in Daneš 1970; Firbas 1964) used the terms *theme – rheme* and later the Modern Prague School (Sgall, Hajičová, & Benešová 1973) *topic – comment*, both borrowed from traditional rhetoric and philology. This constituted a move from a psychological basis to a basis in information or communication theory. Halliday (1967) learned from the Prague School about information structure, and introduced this concept into the American Structuralism. Chomsky (1971) and Jackendoff (1972) rephrased the distinction in terms of *presupposition – focus*, stressing the semantic-pragmatic nature of the distinction. See (10) for a succinct survey.

(10)   *Terminology for the informational dichotomy*
    (i)   von der Gabelentz (1869), Paul (1880)   *psychological subject – psychological predicate*
    (ii)   Amman (1925), Prague School: Firbas (1964), Daneš (1970)   *theme – rheme*
    (iii)   American Structuralist Tradition: Halliday (1967)   *theme – rheme*

| (iv) | Modern Prague School: Sgall, Hajičová, & Benešová (1973) | *topic – focus* |
| (v) | Chomsky (1971), Jackendoff (1972) | *presupposition – focus* |

All these approaches share the following main assumptions: first, the partition of the sentence into two disjunctive parts with respect to their informational content; second, the distinction between the parts in terms of their contribution to the sentence meaning; third, the assumption that the two units can be united to give the meaning of the whole sentence in a subject-predicate structure. I argue that none of these three claims is well founded.

First, it is not clear what it means for an expression to present new content (concept, information, proposition) in a sentence. Only the whole sentence can provide new information, not a particular constituent. Even in the answer (1b) to the constituent question (1a) above, the whole sentence provides the new information. It does not make sense to say that the expression *Fred* provides the new information, since *Fred* only refers to some individual, but is unable to express any other information (without additional information from the context). Second, it seems questionable to restrict the information structure to the sentence and not to its setting within a larger discourse. Third, it is highly questionable that the informational units can be merged in a subject-predicate structure. As already argued, it was the view that the traditional subject-predicate structure was insufficient that created the new dichotomy in terms of informational units. Therefore, it is circular to explain the informational units in terms of subject-predicate structure, which itself has not received a semantic explanation, except for Frege's functor-argument structure (see von Heusinger 2002 for a detailed argument).

3. Semantic theories of association with focus

Information structure can have truth-conditional effects in collaboration with focus-sensitive operators such as *only, even,* and *also.* This is illustrated by (11a) and (11b), which differ only in the placement of the pitch-accent, marked by the focus feature *F*. In a situation where Mary introduced Sue to John and Ann to John and no other introductions are made, (11a) is false, but (11b) is true.

(11) a. Mary only introduced SUE$_F$ to John.
       b. Mary only introduced Sue to JOHN$_F$.

Such observations triggered a new interest of semantic theories of information structure. The semantics of focus-sensitive operators is generally assumed to require two kinds of additional information: the value of the focused expression, and the value of the linguistic environment of the focus, called the *background*. In (11a), *Sue* is the focus unit, whereas *introduced to John* is the background unit. The focus-sensitive particle is translated into an operator that takes two arguments. Semantic theories differ in the way they compositionally construct the two arguments. The Structured Meanings approach assumes a partition of the meaning of the sentence, while Alternative Semantics composes alternative denotations parallel to the ordinary denotations, as discussed below.

3.1 Structured Meanings

Theories of Structured Meanings assume that the focus is moved to a position adjoined to the focus operator at the level of Logical Form (= LF). The focus leaves a trace in its original position, interpreted as a variable. The LF representation can be translated into the categorial language of *Structured Meanings* (Jacobs 1983; von Stechow 1982; Krifka 1991).[4] In (12a), I represent the VP-constituent of (11a) headed by the focus sensitive operator *only*. The focus *Sue* is moved out of its base position toward the operator and leaves a trace in the original position. The background, λt_1 [$_{VP}$ *introduced t_1 to John*], consists of the remainder of the VP with a lambda abstraction over the variable left by the focus. The lambda abstraction forms a relation between two individuals x and y (in subject and direct object positions, respectively) such that x introduces y to John. Hence the information structure of the sentence is reconstructed by dividing the sentence differently into an "informational predicate" and an "informational argument". *Only* is translated into an operator that takes these informational units as its arguments, as in (12c):

(12) a.   only [$_{VP}$ introduced SUE$_F$ to John]
           F: Sue
           B: λt_1 [$_{VP}$ introduced t$_1$ to John]
      b.   only (Sue$_1$, λt_1 [$_{VP}$ introduced t$_1$ to John])
      c. ||only|| (||Sue||, ||λt_1 [$_{VP}$ introduced t$_1$ to John]||)

The meaning of *only* combines with such a structured meaning consisting of the meaning of the focus and of the background. The semantic rule (13a) of this operation first applies the meaning of the background to the meaning of

the focus, and, secondly, if the background is applied to any object other than the meaning of the focus, the statement is false.[5]

(13) a. $||only||(\mathbf{F}, \mathbf{B}) = \lambda x\ [\mathbf{B}(\mathbf{F})(x)\ \&\ \forall y \in ALT(\mathbf{F})\ [\mathbf{B}(y)(x) \rightarrow y = \mathbf{F}]]$
       b. $ALT(\mathbf{d}) = D_{type(\mathbf{d})}$
       c. $ALT(||Sue||) = D_{type(||Sue||)} = D_{type(\mathbf{s})} = D_e = \{\mathbf{b}, \mathbf{j}, \mathbf{m}, \mathbf{s}, ...\}$

The domain of quantification of the operator is formed by a function *ALT* applied to the meaning of the focus, **F**. The function *ALT* takes an object, **d**, and yields the set of elements of the same type as **d**, as in (13b). We may also say that **d** generates the set of alternatives *ALT(d)*. The function *type* assigns a type to an object, e.g. (13c), where the denotation of a proper name like *Sue* is of type *e*. Hence, the alternatives generated from the denotation of *Sue* are all elements of type *e*, i.e. the domain of individuals.

These rules can now be applied to example (11a), repeated as (14a). In the LF representation, (14b), the focused expression *Sue* is moved to a position adjoined to *only*, and leaves the trace t_1. This translation is compositionally interpreted: proper names and predicates denote constants, as in (14c). The application of a predicate to its argument is defined as a functional application, as in (14d). In (14f), the semantics (13a) of *only* combines with the meaning of the focus and the background. This yields the property of introducing nobody else but Sue to John. Finally in (14f), this property combines with the subject, resulting in the interpretation of the whole sentence. It correctly expresses that Mary introduces Sue to John and that she does not introduce anyone else to John.[6]

(14) a. Mary [$_{VP}$ only [$_{VP}$ introduced Sue_F to John]]
       b. Mary [$_{VP}$ only [Sue$_1$]$_{Focus}$ [λt_1 [$_{VP}$ introduced t_1 to John]]$_{Background}$]
       c. $||Mary|| = \mathbf{m}\ ||Sue|| = \mathbf{s}\ ||John|| = \mathbf{j}\ ||introduced|| = \mathbf{intro'}$
       d. $||\lambda t_1\ [introduced\ t_1\ to\ John]|| = \lambda z\ [\mathbf{intro'}(z)(\mathbf{j})]$
       e. $||only||\ (||[Sue]||, ||\lambda t_1\ [introduced\ t_1\ to\ John]||)$
           $= \lambda x\ [\mathbf{intro'}(\mathbf{s})(\mathbf{j})(x)\ \&\ \forall y \in ALT(\mathbf{s})\ [\mathbf{intro'}(y)(\mathbf{j})(x) \rightarrow y = \mathbf{s}]]$
       f. $||Mary\ only\ [Sue\ \lambda t_1\ [introduced\ t_1\ to\ John]]||$
           $= \mathbf{intro'}(\mathbf{s})(\mathbf{j})(\mathbf{m})\ \&\ \forall y \in ALT(\mathbf{s})\ [\mathbf{intro'}(y)(\mathbf{j})(\mathbf{m}) \rightarrow y = \mathbf{s}]$

One of the problems of this semantic approach to information structure is that even though focus movement is understood as an instantiation of a more general principle of movement, it does not obey island restrictions that hold for quantifiers or wh-movement (Jackendoff 1972; Rooth 1985; Kratzer 1991; von Stechow 1991). Another, more serious problem is that in certain cases, focus movement makes the wrong predictions (compare the discussion in Section 4).

3.2 Alternative Semantics

Alternative Semantics (Rooth 1985, 1992, 1995) does not separate the meaning of the focus from the meaning of the background by extracting the focus out of the background. Rather it leaves the focus *in situ* and compositionally computes the alternatives generated by the focused expression onto a new semantic level. Alternative Semantics distinguishes between two dimensions of meaning, the *ordinary meaning*, $|| \ ||_O$, and the *alternative meaning*, $|| \ ||_A$. The alternatives are formed by the function *ALT* applied to the ordinary meaning of the focused expression. The alternative value of an expression is a set containing elements of the same type as its ordinary meaning. In this sense, the alternative meaning of a basic expression is derived from the corresponding ordinary value. The alternatives are projected parallel to the composition of the ordinary meaning.[7]

Since there are two semantic dimensions, we have to define the interpretation rules for either dimension in (15a–c).

(15) a. $||\alpha||_O = ||\alpha_F||_O$
      b. $||\alpha_F||_A = \text{ALT}(||\alpha||_O) = D_{\text{type}(||\alpha||_O)}$
      c. $||\alpha||_A = \{||\alpha||_O\}$

The ordinary interpretation (15a) does not see the focus feature *F* and, therefore, interprets a focused expression like the unfocused one. The alternative interpretation of a focused expression (15b) creates the set of alternatives. The alternative semantics of an unfocused expression (15c) is the singleton containing the ordinary semantic value. The interpretation of functional application must also be formulated in both ordinary and alternative semantics. The ordinary semantic value of functional application is simple set inclusion, as in (16). The alternative function of functional application (17) is more complex, since it must warrant that the alternatives generated by a focused expression can be projected. It is the set containing all possible expressions *X(Y)*, derived by applying *X* of the first alternative set to *Y* of the second alternative set.

(16) $||\alpha\beta||_O = ||\alpha||_O(||\beta||_O)$
(17) $||\alpha\beta||_A = \{X(Y) \mid X \in ||\alpha||_A, Y \in ||\beta||_A\}$

For example, the application of a predicate to its focused argument is the functional application of its meaning to the meaning of the argument. The alternative set, (18), generated by the VP *talk to* FRED$_F$ includes the interpretations of all VPs of the form *talk to y,* where *y* is an alternative value to Fred. This is the set of individuals *d* that have the property of talking to someone.

(18) $\|\text{talk to Fred}_F\|_A = \{X(y) \mid X \in \|\text{talk}\|_A, y \in \|\text{Fred}_F\|_A\}$
            $= \{\textbf{talk'}(y)(x) \mid y \in \text{ALT}(\textbf{Fred'})\}$
            $= \{d \mid \exists y \; \textbf{talk'}(y)(d)\}$

The definition of the meaning (19) for the focus-sensitive operator *only* operates on both aspects of the meaning of an expression α. When applied to a VP, the ordinary meaning $\|\text{VP}\|_O$ expresses the presupposition, whereas the alternative meaning $\|\text{VP}\|_A$ determines the domain of quantification for the operator. There is no property in the set of alternatives that holds of *x* other than the property that is identical with the ordinary meaning. Here, the operator does not need two disjoint parts of the meaning of the expression as in the LF-movement account. Rather, it works with both dimensions of the meaning. Information structure is reconstructed by the denotation of the ordinary meaning and by the set of alternative denotations. The focus-sensitive particle is translated into an operator defined with respect to the relation between the two kinds of denotations.

(19) $\|\text{only VP}\|_O = \lambda x \, [\|\text{VP}\|_O(x) \; \& \; \forall P \in \|\text{VP}\|_A \; P(x) \rightarrow P = \|\text{VP}\|_O]$

We can now analyze sentence (11a), repeated as (20a). In (20b), the focused expression Sue_F generates a set of alternatives, whereas the alternative interpretations of *Mary*, *John* and *introduce* form singletons containing the ordinary meaning. The ordinary semantics of the application of the predicate *introduce* to its arguments *Sue* and *John* yields the property $\textbf{introd'}(\textbf{s})(\textbf{j})$, as in (21a–b).

(20)   a.   Mary $_{VP}$[only $_{VP}$[introduced Sue$_F$ to John]]
            b. $\|\text{Sue}_F\|_O = \textbf{s}$ $\|\text{Sue}_F\|_A = \text{ALT}(\textbf{s}) = D_e$
            c. $\|\text{Mary}\|_O = \textbf{m}$ $\|\text{Mary}\|_A = \{\textbf{m}\}$
                    $\|\text{John}\|_O = \textbf{j}$ $\|\text{John}\|_A = \{\textbf{j}\}$
                    $\|\text{introduce}\|_O = \textbf{introd'}$ $\|\text{introduce}\|_A = \{\textbf{introd'}\}$
(21)   a. $\|\text{introduced Sue}_F \text{ to John}\|_O = \textbf{introd'}(\textbf{s})(\textbf{j})$
            b. $\|\text{introduced Sue}_F \text{ to John}\|_A = \{\textbf{introd'}(x)(\textbf{j}) \mid x \in \text{ALT}(\textbf{s})\}$
                    for example: $\{\textbf{introd'}(\textbf{s})(\textbf{j}), \textbf{introd'}(\textbf{a})(\textbf{j}), \textbf{introd'}(\textbf{b})(\textbf{j}), ...\}$

The alternative value of this application is the set of properties consisting of introducing someone (i.e. an alternative value to Sue) to John. The semantics of *only* asserts in (22a) that there is only the one such property, that of introducing Sue to John (and there is no other property of introducing someone else to John). This combines in (22b) with the subject and yields the correct semantic representation for the sentence, namely that Mary introduces Sue to John. Furthermore, all predicates that are formed by the description *introduce someone*

to John and that hold of Mary are identical with the property of introducing Sue to John.

(22) a. $||$only introduced Sue$_F$ to John$||_O = \lambda x \, [\mathbf{intro'}(\mathbf{s})(\mathbf{j})(x) \, \&$
         $\forall P \in \{\mathbf{intro'}(y)(\mathbf{j}) | \, y \in \mathrm{ALT}(\mathbf{s})\} \, P(x) \rightarrow P = \mathbf{intro'}(\mathbf{s})(\mathbf{j})]$
    b. $||$Mary only introduced Sue$_F$ to John$||_O = \mathbf{intro'}(\mathbf{s})(\mathbf{j})(\mathbf{m}) \, \&$
         $\forall P \in \{\mathbf{intro'}(y)(\mathbf{j}) \, | \, y \in \mathrm{ALT}(\mathbf{s})\} \, P(\mathbf{m}) \rightarrow P = \mathbf{intro'}(\mathbf{s})(\mathbf{j})]$

For simple examples like (20a), both theories give very similar analyses and predict the same truth conditions, as we can see by comparing (14f) with (22b). However, there are more subtle differences between Structured Meanings and Alternative Semantics, discussed in the next section.

3.3 Comparing semantic theories of information structure

There is an ongoing debate as to whether Structured Meanings or Alternative Semantics is more suitable to describe association with focus and focus-phenomena in general. I do not want to go into this discussion here (but see Rooth 1985; von Stechow 1991; Kratzer 1991; Krifka 1991; among others). However, I provide a short summary of the two semantic theories with respect to their reconstruction of information structure. Theories of Structured Meanings assume that the focus feature on a constituent forces the constituent to move from its base position to a focus sensitive operator. The logical form is then translated into Structured Meanings, i.e. into a representation of the meaning of the expression that describes the focus as the argument and the background as complex predicate (via lambda abstraction). The interpretation process can then proceed in the usual way. The focus sensitive particle is translated into an operator that takes the two parts of the structured proposition as its arguments. Thus, this approach reflects the conception of information structure presented in Section 2 in a semantically elaborated way – the problematic subject-predicate structure is reconstructed as the functor-argument relation in the Fregean sense, but independent of (and sometimes orthogonal to) the functor-argument structure of the sentence induced by syntax and LF representation.

Alternative Semantics does not assume focus movement. It leaves focused constituents *in situ*. The surface form is translated into a semantic representation (intensional logic) to which the focus feature *F* is added. There are two interpretation processes, one yielding the ordinary meaning, the other yielding the alternative meaning. The alternative meaning consists of alternatives generated by the focused expression and projected by compositional rules. In-

Surface Structure

↓   *focus movement*

Logical Form

↓   *translation*

Semantic Representation
(= Structured Meanings)

↓ || || *interpretation*
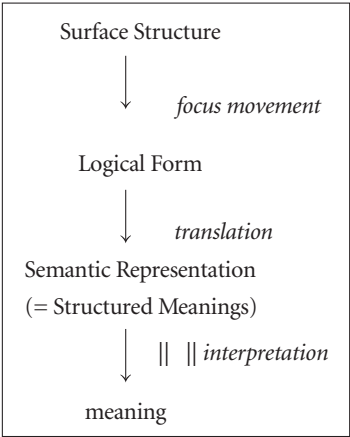
meaning

Figure 1. Reconstruction of information structure in Structured Meanings

Surface Structure

↓ *focus movement*

Logical Form

↓ *translation*

semantic representation

ordinary || ||$_O$ || ||$_A$ *alternative*

interpretation   *interpretation*
ordinary   alternative
meaning   meaning
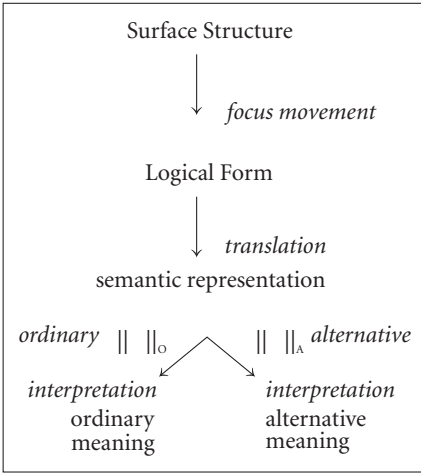
Figure 2. Reconstruction of information structure in Alternative Semantics

formation structure is understood as a relation between the ordinary and the alternative meaning of a sentence, and focus operators compare the ordinary and the alternative meaning.

While Structured Meanings approaches stick to a dichotomy of the sentence, Alternative Semantics assumes one representation, but two interpretations, computed in parallel. Thus information structure is not understood as a dichotomy of the sentence, but rather as the instruction to generate two

meanings (denotations). In Section 5, I modify this view: I will argue that information structure is an instruction to generate two discourse representations, rather than two denotations as in Alternative Semantics. The argument is built on problems with the compositionality in cases of association with focus in definite NPs. This argument will be pursued in the following section.

4.   Association with focus in definite NPs

In the previous section, it was argued that association with focus reveals the complex interaction between different levels of semantic representation and interpretation. However, both discussed approaches have problems with cases of association with focus in definite NPs. Imagine the following situation: At an international art exhibition, some critics, several German, Italian and American artists, but only one Swiss artist appeared. Sam talked to the Swiss artist and to one of the two German artists and to nobody else. In this context, sentence (6a), repeated as (23a), is intuitively false. Yet in Structured Meanings as well as in Alternative Semantics the sentence is predicted to be true.

In the Structured Meanings account the focused adjective is moved to the operator as in (23b) with the paraphrase (23c). *Only* is translated into an operation on the focus and background as defined in (13a). The definite article is represented with its classical semantics as iota-operator expressing the uniqueness condition (here: there is only one Swiss artist). A paraphrase for (23d) is: for all properties X, alternative to Swiss, if there exists a unique element x such that x has X and x is an artist and Sam talks to x, then X is Swiss.

(23)   a.   Sam only talked to the Swiss$_F$ artist.
       b.   Sam only (Swiss$_1$, λX_1 [talked to the X_1 artist])
       c.   No nationality but Swiss is such that Sam talked to the artist of this nationality.
       d. $\forall X \in ALT(\textbf{Swiss'})$ [**talk'**(**s**, ιz [X(z) & **art'**(z)]) $\rightarrow$ X = **Swiss'**]

The uniqueness condition of the definite article reduces the domain of quantification to exactly one element: the Swiss artist. All other expressions of the kind *the X artist* are not well-formed, since they do not satisfy the uniqueness condition of the definite article. Thus, in a situation in which Sam talked to the Swiss artist and to one of the German artists, the sentence is counter-intuitively predicted to be true, since no alternatives have survived the compositional process of the background part of the Structured Meanings.

Similar considerations hold for the analysis in Alternative Semantics, as will be illustrated in detail with example (23a), repeated as (24a). The adjective *Swiss* induces alternatives such as *German, American*, and *Italian*. But again, when these alternatives compositionally combine with the definite article, as in *the X artist* for X∈{Swiss, German, American, Italian}, only *the Swiss artist* survives the uniqueness condition of the definite article. In order to compose the alternative meaning of the definite NP, we have to account for the alternative meaning of the definite article. In a first approach we assume, according to the general rule in (15c) above, that the alternative meaning of the article is the singleton of its ordinary meaning. If we take the iota operator as the ordinary meaning of the definite article, we then have the singleton containing the iota operator as the alternative meaning. Thus we get the ordinary meaning (24b) and the alternative meaning (24c) for the definite NP *the* Swiss$_F$ *artist*. Here, the alternative set consists of unique artists with respect to nationality. Since there is more than one artist for all countries but Switzerland, all iota expressions are undefined except the one for the Swiss artist. Hence, the alternatives would include one single individual, namely the unique Swiss artist (see von Heusinger 1997 for a more elaborate argument):

(24) a. [the Swiss$_F$ artist]$_{NP}$
      b. $||$the Swiss$_F$ artist$||_O$ = ιx [**Swiss'**(x) & **art'**(x)]
      c. $||$the Swiss$_F$ artist$||_A$ = {X(Y) | X∈ {ι}, Y∈$||$Swiss$_F$ artist$||_A$}
          = {d | d = ιx [R(x) & **art'**(x)] for some R∈$||$Swiss$_F||_A$}
          = {ιx [**Swiss'**(x) & **art'**(x)]}

Intuitively, the correct domain of quantification for the operator *only* consists of just all the artists at that meeting. In other words, the focused expression does not contribute to the construction of the domain of quantification. On the contrary, it is "invisible" for that process. It seems, therefore, that approaches which rely on the distinction of focus and background are unable to analyze complex NPs. Such theories are usually illustrated with proper names, which are a special type of NP. An adequate approach to information structure must base the definition for the informational units on their discourse functions, rather than on a simple partition of a sentence. In the next section, I introduce a simple discourse structure, which then is extended to the foreground-background theory of information structure. This will meet the conditions which we failed to detect in either of the previous approaches.[8]

5.   Discourse structure

Information structure, in general, and focus, in particular, are means to create a coherent discourse. This is true of most of the more traditional approaches presented in Section 2. However, most formal theories restrict their analyses to the sentence (cf. Rooth 1985, 1992; Krifka 1991 among others). Only few approaches take the more traditional line and discuss the relation between discourse and focus (Roberts 1996; Schwarzschild 1999; see Kadmon 2001 for an evaluation). I will discuss this relation in discourse representation theory.

The initial problem that motivated discourse representation theories was the interpretation of nominal and temporal anaphora in discourse. The phenomenon of cross-sentential anaphora forces a semantics to extend its limits from the sentence to the discourse. The key idea in the approach to the semantics of discourse, exemplified in Heim (1982) and Kamp (1981), is that every new sentence or phrase is interpreted as an addition or 'update' of the context in which it is used. This update often involves connections between elements from the sentence or phrase with elements from the context. Informally described, a sequence of sentences S_1, S_2, S_3, S_4 is interpreted by incrementally constructing a discourse representation structure (DRS) in Discourse Representation Theory (DRT) of Kamp (1981) and Kamp and Reyle (1993), as in Figure 3.

$$S_1 \Rightarrow DRS_1$$
$$S_2 \Rightarrow DRS_2 \ (= DRS_1 + ...)$$
$$S_3 \Rightarrow DRS_3 \ (= DRS_2 + ...)$$

Figure 3. Construction of a DRS in classical DRT

Anaphoric relations and definite expressions are captured by links between objects in this representation. In order to derive the truth conditions of the sentence, the representation is embedded into a model. The best way to get acquainted with DRSs is to look at the example (25).

(25)   a.   A man walks.
       b. $\{x \mid man(x) \ \& \ walk(x)\}$

(25b) describes a discourse representation structure (DRS) with two parts. One part is called the *universe* of the DRS, the other its *condition set*. A DRS is an ordered pair consisting of its universe and condition set, written as $<U_K, Con_K>$.

The DRS in (25b) has as its universe one discourse referent *x* and as its condition a set of properties that are ascribed to the discourse referents in the universe. In (25b) the property of being a man and of walking is ascribed to the discourse referent *x*. To yield the truth conditions for (25a), we need to define a *proper embedding* for the DRS. Informally, a proper embedding for a DRS in an (extensional) model M = <D, || ||>, consisting of a domain D and an interpretation function || ||, is a function *f* that maps the discourse referents onto elements of the domain of M such that the elements are in the extension of the predicates that are ascribed to the discourse referents. For example, the DRS (25b) is true just in case that *f(x)* is a man and *f(x)* walks.

The sequence or conjunction of two sentences as in (26a), receives a DRS incrementally. We start with the already established DRS for the first conjunct in (26b), then a new discourse referent for the pronoun *he* and a condition for the predicate *whistle* is added in (27a). The anaphoric link of the pronoun is graphically represented as *y=?*, indicating that the reference of the pronoun is still unresolved. The discourse referent which stands for an anaphoric expression must be identified with another *accessible* discourse referent in the universe. In the given context *y* is identified with *x*, as in (27b). This mini-discourse is true if there is an embedding function *f* onto a model such that *f(x)* is a man and walks and *f(y) = f(x)* and *f(y)* whistles.

(26) a. A man walks. He whistles.
       b. {x | man(x) & walk(x)}

(27) a. {x, y | man(x) & walk(x) & y=? & whistle(y)}
       b. {x, y | man(x) & walk(x) & y=x & whistle(y)}

The new discourse referent introduced by the pronoun must be linked or identified with an already established and accessible discourse referent. DRT defines accessibility in terms of structural relations, i.e. the discourse referent must be in the same (or in a higher) universe. With this concept of accessibility, the contrast between (28a) and (29a) can be described by the difference in the set of discourse referents that are accessible to the discourse referent *u* of the pronoun *it*. The construction rule for the negation in (29a) creates an embedded discourse universe with the discourse referent *y* and the conditions *donkey(y)* and *x owns y*. The anaphoric pronoun *it* in the second sentence cannot find a suitable discourse referent, since it has no access to the embedded discourse universe with the only fitting discourse referent *y*.

(28) a. Pedro owns a donkey. He beats it.
       b. {x,y,z,u|P(x) & don(y) & x own y & z=x & u=y & z beats u}

(29)   a.   John does not own a donkey. #He beats it.
       b.   {x,z,u|J(x) & ¬{y|don(y) & x own y} & z=x & u=? & z beats u}

This program of investigating sentences and describing their informational properties with respect to the larger linguistic context has just begun. In the remainder of this section, I present Asher's theory of *segmented* DRT (= SDRT) as one of the rare examples of a semantic account of discourse and discourse relations.

Asher (1993, 2004) develops his SDRT, which is not confined to the incremental composition of DRSs, but also captures discourse relations between the sentences in the discourse. He revises the classical DRT of Kamp (1981) and Kamp and Reyle (1993). The classical version describes the dynamic meaning of a discourse by processing sentence for sentence. Since the meaning of each sentence is construed as a function from truth conditions to truth conditions, the truth-conditional content of the whole discourse is reconstructed by the sequential application of these functions. Asher (1993:256) notes that

> the notion of semantic updating in the original DRT fragment of Kamp (1981) (...) is extremely simple, except for the procedures for resolving pronouns and temporal elements, which the original theory did not spell out. To build a DRS for the discourse as a whole and thus to determine its truth conditions, one simply adds the DRS constructed for each constituent sentence to what one already had. (...) This procedure is hopelessly inadequate, if one wants to build a theory of discourse structure and discourse segmentation.

In SDRT, each sentence S_i is first represented as a particular segmented DRS for that sentence. The segmented DRS can then interact with the already established DRS reconstructing a discourse relation R, such as causation, explanation, coherence, elaboration, continuation. Only in a second step is the representation integrated into the already established representation.

To summarize this very short presentation of DRT: The discourse structure of DRT provides not only a new structure, but also introduces new semantic objects: discourse referents, conditions, and discourse domains. DRT explains semantic categories such as definiteness and anaphora in terms of interaction between these representations. Furthermore, the extension to SDRT allows us

$$S_1, S_2, S_3, S_4 \Rightarrow DRS_{discourse}$$
$$S_i \Rightarrow DRS_{segmented}$$

Figure 4.   Construction of a segmented DRS in SDRT

to express discourse relations between whole propositions as well. These new tools, objects, and representations form the basis for a new semantic analysis of information structure. In the next section, this approach is sketched briefly.

6.   Foreground-Background Semantics

The present approach is based on the assumption that a sentence can make (at least) two kinds of contributions to the context: the ordinary meaning and the background meaning. These two contributions are not provided by a division of the sentence surface in terms of focus-background, but rather by two construction mechanisms that translate the sentence into two representations at the level of discourse representation. I assume a SDRT-like model sketched in Section 5 with an extra set of construction rules for the background representations. The foreground representation is constructed from the material of the sentence in the common way a DRS is constructed. The background representation, however, is a DRS in which the focused expressions are not represented. They are merely represented by variables. Background and foreground are both DRSs, or representational objects at the level of discourse representation. Thus, there are (at least) three objects when analyzing a sentence: the DRS for the discourse, the DRS for the background, and the DRS for the foreground:

$$S_1, S_2, S_3, S_4 \Rightarrow DRS_{discourse}$$
$$S_i \Rightarrow DRS_{background}$$
$$\Rightarrow DRS_{foreground}$$

Figure 5. DRSs for the discourse, foreground, and background

There are relations between each pair of DRSs: the relation between the discourse and the foreground establishes the discourse relation R, such as causation, explanation, coherence, elaboration, continuation. The relation between the background and discourse is generally described in terms of givenness. Thus, the status of being part of the background or not basically depends on the given discourse, rather than on some sentence property. And finally the relation between the background and the foreground serves as the domain over which discourse operators and focus sensitive operators range. In the remainder, I will focus on the relation between the foreground and the background representation and illustrate this with the analysis of three examples (adverbs of quantification, contrastive focus, and association with focus in definite NPs).

The adverb of quantification *usually* associates with the focus FRED in (5a), repeated as (30a). It is translated into the operator *Most* that ranges over sets of times that are constructed from the foreground and the background representations as in (30g). In both approaches, Structured Meanings (30d–e) and Alternative Semantics (30f) the focused expression is existentially bound and the operator *Most* binds a time variable. Rooth (1985:164ff.) introduces the union over the alternative set to get the correct type of the operator (a set of time points, rather than a set of sets of time points).

(30)   a.   Sam usually invites FRED$_F$ to the movies.
       b.   For most times in which Sam invites someone to the movies, he invites Fred to the movies.
       c.   Most ({t | Sam invites someone to the movies at t},
               {t | Sam invites Fred to the movies at t})
       d.   Sam usually (Fred$_1$ λx$_1$ invites x$_1$ to the movies.)
       e.   MOST(**t:** ∃x Sam invites x to the movies)
               (**t:** Sam invites Fred to the movies)
       f.   Most(∪{λt[past(t)&AT(t, **invite-to-the-m'**(y, s))] | y ∈ E},
               {λt: AT(t, **invite-to-the-m'**(f, s))]})

The Foreground-Background Semantics shifts the perspective to the different representations and their relation to each other. First the foreground and background are represented as DRSs, as in (31g). The difference between the two representations is the variable *X* in the background representation standing for the focused *Fred*. We can now translate *usually* into an operator *Most* that ranges over possible mappings *h* of the background representation into the foreground representation, as in (31). Here, Most binds the time variable *t* and the focus variable *X* and asserts that for more pairs of <t,X> the value for X is Fred than some other individual. Thus, we need not to existentially bind the focus variable.

(30)   g.   B-DRS: {x, y, t | Sam(x) & X(y) & x takes y to the m at t}
               F-DRS: {x, y, t | Sam(x) & Fred(y) & x takes y to the m at t}
       h.   Most ({x, y, t | Sam(x) & X(y) & x takes y to the m at t},
               {x, y, t | Sam(x) & Fred(y) & x takes y to the m at t})

(31) ||Most(B-DRS, F-DRS)||^g
       = 1 iff there are more h with ||B-DRS||^{g,h} = ||F-DRS||^g
               then h' with ||B-DRS||$^{g,h'}$ ≠ ||F-DRS||^g]

(30h) expresses that most possible mappings *h* from the background onto the foreground replace the *X* by *Fred*, or to paraphrase: for most instances (time

points) at which Sam invites someone to the movies, he invites Fred to the movies. Thus, the adverb of quantification operates on the mapping function from the background onto the foreground, which is equivalent to binding pairs of variables. We can now also apply this mechanism to the other two examples.

The foreground representation in (32b) contains the two discourse referents, x and y. Moreover, it contains the conditions which link the discourse referents to Sam and to Fred, and finally it contains the condition that expresses the relation of talking between the two. The background representation in (32b) contains the same structure as the foreground except for the condition *Fred(y)*, which is replaced by $X(y)$. The felicity conditions can now be formulated in the following way: Sentence (32a) is felicitous if there is no alternative mapping h' that assign to X individuals such that Sam might have talked to them. The semantics of *only* is defined in (33) as follows: *Only* takes a background DRS and a foreground DRS and asserts that there is only one mapping function h that exactly maps the foreground into the background. This can be reduced in (32c) to asserting that all possible mappings map X to *Fred*.

(32)   a.   Sam only talked to FRED$_F$.
       b.   B-DRS: $\{x, y|$ Sam(x) & $X(y)$ & x talks to y$\}$
            F-DRS: $\{x, y|$ Sam(x) & Fred(y) & x talks to y$\}$
       c. $\exists h \, \forall h' \, [\, ||X \, ||^{g,h'} = ||\text{Fred} \, ||^g \rightarrow h = h']$

(33) $||\text{only(B-DRS , F-DRS)}||^g$
       $= 1$ iff $\exists h \, \forall h' \, ||\text{B-DRS}||^{g,h'} = ||\text{F-DRS}||^g \rightarrow h = h']$

Finally, let us have a closer look at example (6a), repeated as (34). The focused adjective *Swiss* is replaced by a predicate variable X in the background. We have to make a second assumption about this representation, that is independent of the particular assumptions of Foreground-Background Semantics: The definite article does not contribute to the semantics proper. The uniqueness condition is presuppositional and therefore it is not included in the semantic representation of the foreground (even though it could be added as a presuppositional condition). Therefore, the uniqueness condition is not represented in the background representation, either. One way to implement this is to assume with other discourse semantics (Heim 1982; Kamp 1981; Kamp & Reyle 1993), that definiteness is a discourse pragmatic concept which is not expressed at the level of the lexical meaning. It is operative while constructing the DRSs, for example, as an additional condition that there is only one Swiss artist. Such a condition could be understood as a locally accommodated representation (cf. Kamp & Reyle 1993:297–299), which will be suppressed here, as in (34). This

view also assumes that the the background representation for definite NP is identical to that of indefinite NPs.[9]

The operator *only* ranges over possible mappings h from the background onto the foreground. Since the only difference is the (alternative) value for X (being Swiss in the foreground), we can compare mappings for this value: $h(X)$. The semantics of *only* in (33) above tells us that there is only one mapping for this variable, namely the mapping to *Swiss*.

(34) a. Sam only talked to the Swiss$_F$ artist.
  b. B-DRS: {x, y | Sam(x) & X(y) & artist(y) & x talks to y}
     F-DRS: {x, y | Sam(x) & Swiss(y) & artist(y) & x talks to y}
  c. $\exists h \, \forall h' \, [\, ||X||^{g,h'} = ||Swiss||^g \rightarrow h = h']$

In this very brief sketch, I showed that the informational units in a sentence are discourse units defined in a discourse representation theory. Semantic operations on these units, such as adverbs of quantification, contrast, or association with focus in definite NPs, can be defined in terms of mapping relations of the background onto the foreground. In this way, focus sensitive operations are generalized to operations on discourse representations.

7. Summary

The concept of Foreground-Background Semantics posits a challenge for semantic theories of information structure, because it tries to integrate a wide range of phenomena. It provides a new view on information structure as being part of a larger discourse representation. Thus the following claims are defended in this paper (compare the lists in (8) and (9) above).

(35) *Assumptions of Foreground-Background Semantics*
  (i) Information structure is to be defined with respect to *discourse.*
  (ii) Information structure is realized as two representations in the discourse structure: the *foreground* representation corresponding to the whole sentence, and the *background* representation.
  (iii) It is the whole sentence that expresses new information (rather than one word or one constituent); so the *foreground* representation expresses the new information; the *background* representation is discourse-anchored, and therefore contains old or given information.

(iv)   Sentence meaning is compositionally formed from the meaning of its parts according to the syntactic structure (LF) and the compositional rules of semantics, rather than in terms of information structure.

(v)   Focus sensitive particles are translated into operators that take the foreground and the background as their arguments (O(*background*, *foreground*)).

(vi)   Adverbs of quantification are translated into operators that take the foreground and the background as their arguments (Adv(*background*, *foreground*)).

These main assumptions of Foreground-Background Semantics have led to a different view of information structure, understood as a part of discourse semantics and therefore as a part of semantics in general. It is beyond doubt that information structure affects sentence processing, psychological models, and computational questions of language, but as described here, this occurs on a linguistic, discourse-semantic level with linguistic objects.

Notes

1. This article is the revised version of a talk at the conference *Making Sense – From Lexeme to Discourse* in Groningen in November 2000. I would like to thank the organizers for that pleasant event, and the audience for helpful comments on the paper. I am very grateful to three anonymous reviewers for constructive and detailed comments, and Miriam Butt for correcting my English. I am particularly indebted to Alice ter Meulen for her encouragement and friendly advice for the final version of this paper. The research was supported by a Heisenberg-Fellowship of the German Science Foundation.

2. A reviewer pointed out that the focus in (2) can also simply state some new information.

3. This is also motivated by the observation of Schwarzschild (1999) (who credits it to Halliday 1967) that there is no good definition for focus, while there is a clear definition of background in terms of given. Focus is defined as the unit that is not given (or not background).

4. A reviewer noted that the particular formulation in Krifka (1991) is an *in situ*-approach. However, I follow Krifka (1996) in describing it as a 'movement approach'.

5. This is a simplification since the first conjunct $B(F)(x)$ is the presupposition and the second is the assertion. In the remainder, both aspects of the meaning are merged for convenience.

6. The formalism observes the following conventions: The lexical meaning of nouns, adjectives and verbs are represented in bold face with apostrophes. Proper names may be abbreviated by their first letter. A predicate takes first its subject argument, then its indi-

rect object and then the direct object. For example, the sentence *Mary introduces Sue to John* receives **introd'**(**s**)(**j**)(**m**) as its semantic translation.

7. Here I assume a recursive version of Alternative Semantics, which was formulated in Rooth (1985). However, there are also non-recursive definitions of Alternative Semantics. In such approaches a variable substitutes the focus value in the representation for a VP or a full sentence yielding the p-set (see Kadmon 2001:363 for discussion). I present in Section 6 a similar approach to the substitution approach, but with a recursive definition of the structure.

8. There are very few analyses that investigate focus on nominal constituents, such as adjectives. Kadmon (2001:363) summarizes her discussion of such approaches as follows: "I conclude that it may be best to give sentence-internal contrasts an account that is not based on focus semantic values of non-clauses." Thus she agrees with others to calculate the focus semantic value only from the full sentence (or the VP-constituent).

9. It was repeatedly noted by the reviewers and other commentators that this assumption is independent of the particular properties of the proposed framework and that it could also built into other frameworks. However, it seems to me that DRT is more appropriate to represent the identity of the background representation of definite and indefinite NPs than other formats.

References

Ammann, Hermann (1925). *Die menschliche Rede. Sprachphilosophische Untersuchungen. 1. Teil: Die Idee der Sprache und das Wesen der Wortbedeutung.* Lahe i.B.: Schauenburg.

Asher, Nicholas (1993). *Reference to Abstract Objects in Discourse.* Dordrecht: Kluwer Academic.

Asher, Nicholas (2004). "From Discourse Macro-structure to Micro-structure and Back again: Discourse Semantics and the Focus/Background Distinction". In H. Kamp & B. Partee (Eds.), *Context Dependence in the Analysis of Linguistic Meaning.* Amsterdam: Elsevier.

Chomsky, Noam (1971). "Deep Structure, Surface Structure, and Semantic Representation". In D. D. Steinberg & L. A. Jakobovitz (Eds.), *Semantics* (pp. 193–217). Cambridge: CUP.

Daneš, Frantisek (1970). "One Instance of Prague School Methodology: Functional Analysis of Utterance and Text". In P. Garvin (Ed.), *Method and Theory in Linguistics* (pp. 132–146). The Hague: Mouton.

Firbas, Jan (1964). "On Defining the Theme in Functional Sentence Analysis". *Travaux Linguistique de Prague, 1*, 267–280.

von der Gabelentz, Georg (1869). "Ideen zu einer vergleichenden Syntax. Wort und Satzstellung". *Zeitschrift für Völkerpsychologie und Sprachwissenschaft, 6*, 376–384.

Halliday, Michael (1967). "Notes on Transitivity and Theme in English. Part 1 and 2". *Journal of Linguistics, 3*, 37–81; 199–244.

Heim, Irene (1982). *The Semantics of Definite and Indefinite Noun Phrases.* Ph.D. Dissertation, University of Massachusetts, Amherst, University Microfilms, Ann Arbor.

von Heusinger, Klaus (1997). "Focus in Complex Noun Phrases". In P. Dekker, M. Stokhof, & Y. Venema (Eds.), *Proceedings of the Eleventh Amsterdam Colloquium* (pp. 49–54). ILLC / Department of Philosophy, University of Amsterdam.

von Heusinger, Klaus (2002). "Information Structure and the Partition of Sentence Meaning". In P. Sgall, E. Hajišová, J. Hana, & T. Hosovec (Eds.), *Travaux du Cercle Linguistique de Prague n. s. / Prague Linguistic Circle Papers 4* (pp. 275–305). Amsterdam; Philadelphia: Benjamins.

Jackendoff, Ray (1972). *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Jacobs, Joachim (1983). *Fokus und Skalen. Zur Syntax und Semantik von Gradpartikeln im Deutschen*. Tübingen: Niemeyer.

Kadmon, Nirit (2001). *Formal Pragmatics. Semantics, Pragmatics, Presupposition, and Focus.* Oxford: Blackwell.

Kamp, Hans (1981). "A Theory of Truth and Semantic Interpretation". In J. Groenendijk, T. Janssen, & M. Stokhof (Eds.), *Formal Methods in the Study of Language* (pp. 277–322). Amsterdam: Amsterdam Center.

Kamp, Hans & Uwe Reyle (1993). *From Discourse to Logic. Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*. Dordrecht: Kluwer.

Kratzer, Angelika (1991). "The Representation of Focus". In A. von Stechow & D. Wunderlich (Eds.), *Semantik. Ein internationales Handbuch der zeitgenössischen Forschung* (pp. 825–835). Berlin: de Gruyter.

Krifka, Manfred (1991). "A Compositional Semantics for Multiple Focus Constructions". *Proceeding of the First Conference on Semantic and Linguistic Theory* (*SALT 1*), 127–158.

Krifka, Manfred (1996). *Frameworks of the Representation of Focus*. Ms. ESSLLI 96 Conference on Formal Grammar.

Paul, Hermann (1880). *Prinzipien der Sprachgeschichte*. Halle: Niemeyer.

Roberts, Craige (1996). "Information Structure in Discourse. Towards an Integrated Formal Theory of Pragmatics". In J.-H. Yoon & A. Kathol (Eds.), *Ohio State University* [=*OSU*] *Working Papers in Linguistics*, Vol. 49 (pp. 91–136).

Rooth, Mats (1985). *Association with Focus*. Ph.D. Dissertation, University of Massachusetts, Amherst, Graduate Linguistics Student Association (GLSA), University of Massachusetts, Amherst.

Rooth, Mats (1992). "A Theory of Focus Interpretation". *Natural Language Semantics, 1*, 75–116.

Rooth, Mats (1995). "Indefinites, Adverbs of Quantification, and Focus Semantics". In G. Carlson & F. Pelletier (Eds.), *The Generic Book* (pp. 265–299). Chicago: University of Chicago Press.

Schwarzschild, Roger (1999). Givenness, Avoid F and other Constraints on the placement of Accent. *Natural Language Semantics, 7*, 141–177.

Sgall, Petr, Eva Hajišová, & Eva Benešová (1973). *Topic, Focus and Generative Semantics*. Kronberg/Taunus: Scriptor.

von Stechow, Arnim (1982). *Structured Propositions*. Arbeitspapier 59 des Sonderforschungsbereichs 99, Universität Konstanz.

von Stechow, Arnim (1991). "Current Issues in the Theory of Focus". In A. von Stechow & D. Wunderlich s (Eds.), *Semantik. Ein internationales Handbuch der zeitgenössischen Forschung* (pp. 804–825). Berlin: de Gruyter.

On the interpretation of multiple negation in spoken and written Afrikaans*

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1. Introduction

While in recent years much attention has been paid to the phenomenon of negative concord (NC) in the spoken varieties of the West Germanic languages (cf. Haegeman 1995 for West Flemish or Bayer 1990; Weiß 1998, 1999, 2000 and Abraham 2000 for Bavarian), negation in Afrikaans, apart from a few descriptively oriented studies (cf. Ponelis 1993 or Donaldson 1993), has remained a rather neglected field of research (see, however, more recently Abraham 2000 and Molnárfi 2002b). The aim of the present paper is to fill this empirical gap, introducing new data from both standard and substandard Afrikaans into the discussion. Our major concern here will be sentential negation in Afrikaans as exemplified in (1):

(1) Ek het *nie*$_1$ geweet dat hy bobbejane gesien het *nie*$_2$.
      I   have not known that he baboons   seen   has not
      'I didn't know that he has seen baboons'

A distinctive feature of (1) is the establishing of a *negation bracket* (NB), consisting of two morphologically identical negative particles. The first negator (*nie*$_1$) opens the scope of negation, whereas the second one (*nie*$_2$) marks the right-periphery of the sentence, accompanying negated elements deep down into the extraposition domain. Similar to what has been observed in Bavarian and West Flemish, the multiple occurrence of negation particles does not trigger the logical cancellation of negation. A sentence such (1) is not interpreted as double negation, but has the semantics of a single sentential negation. This

phenomenon is referred to as *negative concord* in the literature (cf. Haegeman 1995: 116; Weiß 1999: 819).

Interestingly, the semantic interpretation of NC seems to vary in standard Afrikaans and its spoken vernaculars. Negative concord is much more radical in the spoken language, where the spell-out of *additional* negation copies with NC-reading is allowed.

(2)   Ek het   *niemand nie* gesien *nie*.
       I   have nobody   not   seen   not

Readings (LC = logical negation canceling, NC = negative concord)

   a.   I have seen everybody   (LC-reading, preferred in the written language)
   b.   I have not seen anybody (NC-reading, preferred in the spoken language)

In the present paper, I will attempt to account for this puzzling semantic difference with respect to the interpretation of negation scope tied to stylistic variants of language. The main idea pursued here is akin to Abraham (1999, 2000), explaining the emergence and use of certain grammatical forms as specific means of oral communication employed to facilitate sentence parsing. In this spirit, I will analyse NC as a characteristic property of spoken vernaculars, arguing that spoken and written languages employ different strategies of information processing, which can affect the semantic interpretation of negation. All this has a lot to do with the following questions: Is negative concord indeed an instance of operator licensing in the spirit of the Negative Criterion (Haegeman 1995; Rizzi 1996) and as such morpho-syntactically driven? Or is it primarily motivated in semantic terms, being inextricably intertwined with conflicting quantificational and negation requirements of weak indefinites in the sense of Weiß (1998, 1999)? One of the central assumptions of this paper will be that, beyond solid empirical arguments for the existence of a Neg-projection in Afrikaans, negative concord, contrary to Haegeman (1995) and others, should not be captured in terms of a formal operator-licensing mechanism. Neither will the semantic restriction with respect to indefiniteness made by Weiß (1998) be taken to be universal or seen as sufficient to account for the Afrikaans data. Rather, NC is analysed as an instance of top-down feature percolation, where silent copies of the first negator infiltrate all terminal nodes within the scope of negation. Written and spoken Afrikaans will be shown to differ with respect to the constraints which govern the morphological *spell-out* of the negation copies. While the uniqueness of scope marking is strictly enforced by negation bracketing in the written standard, the lexicalization of

additional neg-copies is allowed in certain substandard variants of Afrikaans. The latter mechanism, a characteristic property of spoken vernaculars, is taken to signal important scope dependencies and to identify discourse functional categories early in the information flow. The most radical form of this parsing strategy is found in *negative spread*, where *all* negation copies are spelled out at PF to ensure the maximal identification of the negation domain.

The paper is organised as follows. First, I will present the relevant empirical data on negative concord in Afrikaans. Then, turning to the discussion in Section 3, I will assume the existence of an abstract feature [+Neg] that is copied and spelled out redundantly within the scope domain of negation. In Section 4, 5 and 6, I will discuss the main theoretical and empirical consequences of this proposal, showing that spoken and written Afrikaans obey different constraints with respect to the spell-out rules of negation copies. Section 7 presents the conclusions.

2. Empirical data

Putting aside the case of inherently negative quantifiers for the time being (but cf. Section 3.2 for discussion), from a descriptive point of view multiple negation in Afrikaans consists of two morphologically identical negation particles. The first negator (nie_1), determining the scope of negation, is doubled at the coda of the negation domain (nie_2) (cf. Ponelis 1993 and Donaldson 1993).

(2) a. NIE_1 NP/PP/AP NIE_2
     b. NIE_1 VP NIE_2

Accordingly, (2a) is the schematic representation of constituent negation, while (2b) is the schematic representation of sentential negation in Afrikaans, exemplified in (3a) and (3b) respectively:

(3) a. *Nie*$_1$ ver van hier *nie*$_2$ het ek gebly.   (NC-reading)
         not far of here not have I stayed
         'I have stayed not far from here'
     b. Ek het *nie*$_1$ boeke gelees *nie*$_2$ (NC-reading)
         I have not books read   not
         'I have not read books'

Note that (3a and b) share the common semantic property of lacking a reading of logical negation cancellation. In this respect, the realization of the second negation particle is redundant – and, as no new negation scope is opened, it

is clearly of an anaphoric nature. Note further that this holds independently of the question of whether, under well-defined structural conditions, negative constituents such as inherently negative indefinites, may remain invisible at LF for semantic interpretation. One of the central arguments of this essay will be that many of the formal licensing mechanisms proposed to capture NC (cf. most notably the Neg-criterion) are in fact specific instances of more general principles, to be reduced to conditions on anaphoric chain formation and the minimal lexical identification of functional domains.

A peculiarity of NC in (3a and b) is the formation of a *negation bracket*, comparable to the verbal bracket in SOV-Germanic. Just as V_{fin} and V_{infin} bridge the wide *Mittelfeld* in the Westgermania, the negation particles nie_1 and nie_2 mark the right and left boundary of the negation scope. Nie_1 opens the domain of negation and nie_2 closes this domain, the second negator spelled out right-adjacent to the most deeply embedded element in the tree:

(4) a. Ek het$_i$ *nie*[$_{VP}$ boeke t$_i$ gelees *nie*]   (adjacency to the participle)
         I   have not   books   read not
         'I have not read books'
     b. Ek gooi$_i$ *nie* [$_{VP}$ boeke weg$_i$ *nie*] (adjacency to the verb particle)
         I   throw no   books away not
         'I do not throw books away'
     c. Ek lees$_i$ *nie* [$_{VP}$ boeke *nie* t$_i$].   (adjacency to DO)
         I   read not   books not
         'I do not read books'
     d. Ek is   *nie* op die universiteit *nie*.   (adjacency to PP)
         I   am not on the university   not
         'I am not at the university'

The right-peripheral position of the second negator is strictly enforced, even if negated elements are extraposed out of the scope of negation. In this case, the second negator accompanies subordinate clauses or heavy PPs deep down into the domain of extraposition:

(5) a. Ek het   *nie* [$_{VP}$ t$_i$ gedink] [$_{CP}$ dat hy dit sou   doen *nie*]$_i$
         I   have not   thought   that he this would do   not
         'I would not have thought that he would do this'
     b. *Ek het *nie* [$_{VP}$ t$_i$ gedink *nie*] [$_{CP}$ dat hy dit sou doen]$_i$
(6) a. Ek het   *nie* ingegaan op die invloed   van daardie faktore *nie*.
         I   have not in-gone on the influence of   those   factors not
         'I did not go into the influence of those factors'
     b. *Ek het *nie* ingegaan *nie* op die invloed van daardie faktore.

The contrast between (5a–b) and (6a–b) indicates that the negation bracket is not closed at the semantic boundary of the negation domain, which is at the right edge of the VP as demonstrated in the illicit sentences (5b and 6b). Rather, extending the negation scope to the domain of extraposition, the bracketing is *discontinuous*, as it must always take place on the right-periphery of the sentence:

(7) $[_{CP} (\ldots)$ NEG$_1$ [VP]] $[_{Extraposition} (\ldots.)NEG_2]$

The negation bracket, in the form represented in (7), is a striking typological feature of Afrikaans, found only in a handful of other languages of the world (cf. Bernini & Ramat 1996:64f. for a typological survey) and in none of the West Germanic vernaculars displaying NC (cf. Ponelis 1993:465f. for discussion).[1]

   Among the West Germania, Afrikaans enjoys a unique status in a different respect too. It exhibits negative concord as a canonized form of negation in its *written* variant. While the occurrence of multiple negators in other West Germania is restricted to spoken vernaculars (cf. Abraham 2000), the negation pattern in (2) is the only licit choice in standard and in most varieties of substandard Afrikaans.[2] Compare the following sentences from West Flemish and Bavarian (cf. Haegeman 1995:116 and Bayer 1990:20 respectively):

(8)   a.   das an Bosdboon   *koa* Hund   *ned* beisd   (Bavarian)
           that the postman-ᴀᴋᴋ no dog-ɴᴏᴍ not bites
           'that no dog bites the postman'
      b.   daß den Postboten *kein* Hund (*nicht) beißt   (Standard German)
      c.   da   Valère die boeken *nie* an zen voader
           that Valère the books   not to his father
           getoogd *en*-oat   (West Flemish)
           shown   en has
           'that Valère has not shown the books to his father'
      d.   dat Valère de boeken *niet* aan zijn vader (*niet) getoond heeft
                                                       (Standard Dutch)

Neither standard German nor standard Dutch (ABN) allows the expression of sentential negation by multiple negation particles. The corresponding sentences in (8b and d) may contain only one negator phrase. In Afrikaans, on the hand, there is no such contrast between written and spoken language. The negation bracket is required in both cases:

(9)   dat ek *nie* boeke gelees het *(*nie*)
      'that I do not read books'   (Afrikaans – spoken *and* written language)

Note further, that, contrary to Bavarian (cf. Weiß 1999:820 or Abraham 2000), and similar to West Flemish (cf. Haegeman 1995:117f.), NC in Afrikaans is triggered obligatorily if the VP contains any lexical material, regardless of the existence of (inherently negative) indefinites:

(10) a. Ek het$_i$ *nie* [$_{VP}$ t$_i$ (die lied/ 'n lied) gesing *(*nie*)].
          I   have not   the song/a song   sung   not
          'I have not sung (the song/a song).'
      b. Ek sing$_i$ *nie* [$_{VP}$ t$_i$ (**nie*)].
          I   sing not   not
          'I do not sing.'

The contrast between (10a) and (10b) shows that the presence of the second negator depends on the evacuation of the VP by verb movement or by XP-movement to the left and it is not something tied to a single class of elements, that is to the presence of weak indefinites. Once lexical material appears in the scope of negation, the second negator must be realized right-adjacently to it, irrespective of the valency of the verb or the semantic properties of its arguments (cf. also (4a–d) for further examples).

This particular feature of Afrikaans highlights another relevant contrast to spoken vernaculars of the Westgermania. In (10a) and (4a–d), negative concord is not a free option, but the only possible form of negation, independent of the existence of inherently negative quantifiers. This considerably weakens the explanatory power of any NC-analysis based on the idea that (optional) NC would serve to disambiguate quantificational binding properties of indefinites that are ambiguous between a strong and a weak entry (cf. particularly Weiß 1998, 1999 for Bavarian). To all appearances, negative concord is neither confined to the semantic class of indefinites in Afrikaans, nor can such dependency relation be taken to be a universal property of multiple negation (cf. also Bernini & Ramat 1996 and Van der Wouden 1996 for a typological overview).[3]

3. Discussion: The structure of negation in Afrikaans

In the light of the data above, I would like to propose an abstract structure as (11) for negative sentences in Afrikaans.[4]

Drawing on seminal work done by Haegeman (1995) and Rizzi (1996), negation in (11) is represented by a projecting abstract feature which has its own maximal projection on top of VP. While I also will follow the Neg-criterion (cf. 3.2 for discussion) in assuming a landing site for inherently

negative quantifiers in Spec-Neg for purposes of feature checking, I will depart from Haegeman (1995) and others in some relevant respects. First, I will not take the first negator to be an XP-element, but to be the head of the Neg-projection. Further, the second negator is here not given an autonomous status of a syntactic head, in contrast with proposals for Bavarian *ned* (Bayer 1990) or West Flemish *en* (Haegeman 1995). Rather, I will assume that the negation domain is infiltrated by silent copies of the first negator in terms of a feature percolation mechanism, in a spirit similar to the top-down focus spread concept of Rosengren (1993), Jacobs (1993) and recently Haider and Rosengren (1998: 89):

(11)   dat ek$_i$ *nie*$_1$ [$_{VP}$ t$_i$ boeke lees *nie*$_2$].

```
                  NegP
                 /    \
              Spec    Neg'
                     /    \
                   Neg     VP[+Neg]
                   nie₁   /    \
                        t_i    V'[+Neg]
                              /      \
                            NP      +V[+Neg]

                          boeke    lees nie₂
```
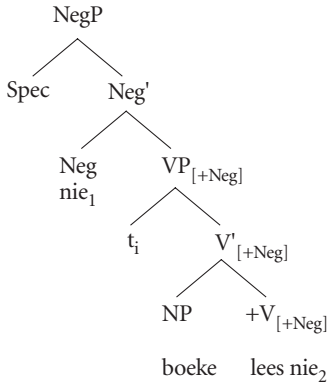
In (11), the scope of negation is the domain dominated by the [+Neg]-feature. In this scenario, NC is about the morphological realization of one or more of the NEG-copies, and the second negator is the spell-out of the lowest copy within the scope of negation. Such anaphoric chain formation will be shown to fulfill important (although different) shibboleth-functions in written and spoken language. In the written language, NC non-redundantly signals the opening and coda-position of the domain of Neg-percolation, while in spoken Afrikaans additional copies can be spelled out at PF to facilitate parsing of the negation bracket. The Neg-criterion, covering only one particular subclass (quantifier raising) of NC, is reduced to the minimal lexical identification requirement of functional projections in the spirit of Ouhalla (1993). In what follows, I will discuss the main theoretical and empirical aspects of this proposal.

3.1 General conditions of Neg-percolation

3.1.1 *The status of the first negator*

The first negator, as head of the Neg-projection, opens the semantic domain of negation at the left edge of the VP. It asymmetrically c-commands[5] each constituent within the government domain of V. I will take this c-command relation to be instrumental in determining all scope dependencies. Elements outside the c-command domain of nie_1 also fall outside the scope of negation, while elements c-commanded by the first negator have to be interpreted within the scope of negation.

One of our central assumptions is that nie_1 is the morphological spell-out of the feature [+Neg], the syntactic head of the maximal projection NegP on top of VP. This is contrary to Haegeman's (1995:117f.) analysis, who claims that, in the West Germanic languages, all first negation particles are in fact XP-elements, to be moved to the operator position Spec-NegP.[6]

However, there are at least two strong arguments for the head status of the first negator in Afrikaans (cf. similar arguments of Weiß 1998:202 for *ned* in Bavarian). First, contrary to XP-elements, nie_1 cannot be topicalized in Afrikaans (contrastive stress (CA) marked by small caps):

(12)   a. **Nie* het hy gekom *nie*.
           not has he come   not
       b. *Nie* HY het gekom *nie*.   (CA)
           not he has come   not
           'It was not him who has come'

That nie_1 does not trigger the V2-effect (inversion) in (12a) indicates that it has no constituent status (cf. also Haftka 1994:139f. or Haider 1997:95 for German *nicht*). Compare, by contrast, (12b) where the negated subject is moved together with the negation particle to SpecCP. (12b) is grammatical if the narrow negation reading of the subject is supported by contrastive stress.

Second, and more importantly, nie_1 displays a clear clitic-like behaviour in negative imperative contexts (in the so called prohibitive). Prohibitive in Afrikaans is very frequently expressed by the word *moenie*, which is a contracted form of the modal auxiliary *moet* and the first negator *nie* (cf. Ponelis 1993:459; Donaldson 1993:416):

(13)   [CP (Jy) [C moenie_i [NEG t_i[VP boeke lees   nie]]]].
           you   must.CL-not   books read not
       'Do not read books'

In (13), the negator has moved out of its functional projection in order to cliti-
cize to the modal verb *moet* in C. A similar movement to C is to be assumed in
the following sentences, showing that nie_1 easily attaches itself to main verbs or
other auxiliaries in the V2-second position.[7]

(14) a. Hulle probeerie werk nie.
          they   try.CL-not work not
          'They try not to work.'
      b. Hulle hoorie   die verkeer nie.
          they   hear.CL-not the traffic not
          'They do not hear the traffic.'
      c. Ek willie   dit doen nie.
          I   want.CL-not   this do   not
          'I don't want to do this.'

The clitic data in (14a–c) provide strong support for the head status of the first
negator in Afrikaans.

3.1.2 *The status of the second negator*

Given the peculiarities of negation bracketing in Afrikaans, the question arises
how the morphological reduplication of the first negator at the right-periphery
of the negation domain can be accounted for. In what follows, I will adopt
an idea of Jacobs (1993) and Rosengren (1993), originally proposed in the
framework of focus-background theory. Other than traditional bottom-up ap-
proaches (cf. Selkirk 1984 or Rochemont 1986), Jacobs and Rosengren assume
that focus spreads downwards, that is from a dominating node to all con-
stituents dominated by the abstract feature [+F]. It is also assumed that all
constituents dominated by the percolating +F-feature are in focus. In this way,
the size of the focus domain depends on which node [+F] is assigned to. In the
case of narrow focus the domain of infiltration is minimal, involving only the
focused contituent, while in the case of wide focus the domain of infiltration is
maximal, including the whole VP.

    Let us assume a similar mechanism to explain negative concord in
Afrikaans. While opening the scope of negation, the first negator also infiltrates
the negation domain. Silent copies of the Neg-feature percolate to all terminal
nodes, spreading downwards to the most deeply embedded element. Adopting
this approach, each constituent within the domain of the Neg-feature is also
in the scope of negation. In the case of sentential negation, this domain is the
whole VP. In this scenario, the status of the second negator is that of a phono-
logically restricted (weak) copy of the first negator, spelled out at the end of the

negation scope. Its function is to signal the coda position of the scope domain opened by the first negator. This proposal has the obvious advantage over former analyses that it does not have to rely on the existence of inherently negated indefinites (as in Weiß 1998) or require a Spec-head checking configuration between the two negators (Haegeman 1995) for the formation of the negation chain. Instead, negative concord in the sense discussed here is reduced to the question of which copies can be spelled out in the domain of infiltration. I would like to propose the following spell-out rule for Afrikaans:

(15)   **Spell-out rule of Neg-Percolation**
        Spell out only the lowest copy.

(15) ensures that the percolation of the Neg-feature stops at the rightmost periphery of the tree, that is, the domain of [+Neg] is the largest possible in the case of sentential negation. In what follows, I will discuss the main consequences of this analysis. Let us first turn to the empirical arguments supporting the non-autonomous status of the second negator.

      Our first observation is of a prosodic nature. Contrary to the first negator, the coda position of the second negator cannot be stressed:

(16)   a.   Ek het NIE die boek gesien *nie.*
              'I have NOT seen the book'
        b.   *Ek het nie die boek gesien NIE.

Similarly, the second negator (again contrary to the first negator) cannot be modified by focus adverbials (Abraham 2000: 224):

(17)   a.   Ek het dit glad *nie* gedoen *nie.*
              I   have this ADV not done   not
              'I have not done this at all'
        b.   *Ek het dit nie gedoen glad nie.

In fact, no lexical material can intervene between nie_2 and the past participle in (17a). Note that this condition seems to hold generally. Strict adjacency is enforced between the second negator and whatever element is most deeply embedded within the negation scope. In terms of a feature percolation analysis, this follows straightforwardly. The second negator can freely be associated with different terminal nodes, depending on which node is most deeply embedded (cf. Donaldson 1993: 419). As a phonologically weak copy, nie_2 easily cliticises on such verbal, adjectival or nominal heads:

(18) a. Ek gaan *nie* wag*gie* (>*wag nie*, cliticisation to V)
        I   go   not wait.CL-not
        'I am not going to wait'
    b. Dit lyk   vir my *nie* te er*gie* (>*erg nie*, cliticisation to A)
        this seems for me not too bad.CL-not
        'It does not seem to me too bad'
    c. Dit maak   *nie* sa*kie* (>*saak nie*, cliticisation to N)
        this makes no   matter.CL-not
        'It does not matter'
    d. Hy weet   *nie* van die
        he knows not of   the
        sa*kie* (>*saak nie*, cliticisation to N within PP)
        matter.CL-not
        'He does not know about the matter'

The lack of syntactic autonomy of the second negator also explains why nega-
tion in Afrikaans can also be doubled (copied) beyond the sentence boundary.
As each constituent is associated with silent copies of the Neg-feature within
the domain of negation, moving out a constituent from this domain to a *lower*
position, according to (15), shifts the spell-out position of the second negator
to the right.[8] Compare (1) again, repeated here for convenience as (19):

(19) Ek het   *nie*$_1$ geweet dat hy bobbejane gesien het *nie*$_2$.
     I   have not known that he baboons   seen   has not
     'I didn't know that he has seen baboons

The second negator is spelled out right-adjacent to the most deeply embedded
lexical node that contains a copy of the Neg-feature. Its function is to extend the
negation domain so that extraposed elements can be identified as belonging to
the semantic domain of negation.

On the other hand, moving out a constituent from the negation domain to
a *higher* position does not interfere with the spell-out position of the negation
copy in the spirit (15). So if, in (20), the subordinate clause is topicalized to
SpecCP, the second negator remains spelled out adjacent to the participle in
the lowest position in the tree:

(20) [$_{CP}$ [$_{CP}$ Dat hy bobbejane gesien het]$_i$ het ek *nie*$_1$ t$_i$ geweet *(*nie*$_2$).]

One could argue (as an anonymous reviewer, in fact, does) that, by analyz-
ing both extraposition and the position of the second negator as rightward-
adjunctions to VP, there would be no need for a feature-percolation anal-
ysis in the spirit proposed above. Note, however, that the rightward at-

tachment of the second negator to the VP seems implausible for at least three reasons. First, given an adjunction analysis, the second negator should be treated as an XP-element. However, the particular prosodic and focus properties of nie_2 as well as its clitic-like behaviour (cf. (16)–(18)) clearly contradict such categorial status. Second, it is not clear why the rightward attachment of nie_2 would not be possible in a main clause like (21), where the VP is emptied by leftward movement of the verb and its arguments (cf. also (10b)):

(21) *Ek weet$_j$ dit$_i$ nie_1 [$_{VP}$ [$_{VP}$ t$_i$ t$_j$] nie_2]

(21) is only grammatical if the first negator is *not* doubled at the right edge of the VP (cf. Donaldson 1993: 401f.).

Third, data from spoken Afrikaans show that additional negation copies between the right-periphery coda position and the first negator may be lexicalized under certain circumstances (cf Section 4 for discussion). The question arises what the categorial status of such intermediate negation elements could be, assuming the adjunct status of the coda negator.

In the light of the above considerations, we can maintain the proposed feature-percolation analysis, assuming that nie_2 signals the coda of the extended scope domain opened by the first negator:[9]

extended negation domain

(22)   Neg$_1$ [VP] ([domain of extraposition]) Neg$_2$

(22) indicates that negation bracketing takes place relatively late in the derivation after movement operations (to the left or to the right) have applied. The negation bracket itself has an important identification function: each element within the bracket is interpreted at LF within the scope of negation.

3.2 Negative quantifiers in Spec-Neg

Besides the first negator, another important class of elements trigger negative concord in Afrikaans. Inherently negative quantifiers (INQ) such as *niks* (nothing), *nêrens* (nowhere) or *niemand* (nobody) obligatorily co-occur with the negator *nie* (cf. Ponelis 1993: 453):[10]

(23) a.   Ek het   *niks*   gesê *(nie).
           I   have nothing said not
           'I have not said anything'

    b. Jy   gaan *nêrens*   heen   *(*nie*).
        You go   nowhere to   not
        'You go nowhere'

    c. Ek het   *niemand* gesien *(*nie*).
        I   have nobody seen   not
        'I have not seen anybody'

While perhaps the most famous and most widely discussed form of NC in the literature, the sentences in (23a–c) represent only one of the possible forms of multiple negation across languages. Recall the Afrikaans data introduced in Section 2, suggesting that negative concord cannot be universally tied to the presence of INQs as claimed in Weiß (1998, 1999).[11] Keeping this in mind, let us turn to the discussion of the main properties of NC as triggered by the presence of INQs.

Following Haegeman (1995:129f.) and (Ponelis 1993:453), I assume that INQs Afrikaans are operators, containing an inherent Neg-feature.[12] According to the Neg-criterion of Haegeman (1995) for such operators to take scope, they have to be licensed in a feature checking relation with a negative head.

(24) **Neg-criterion** (Haegeman 1995:106f.)

    a. A Neg-operator must be in a Spec-head configuration with an X^0 [Neg]

    b. An X^0 [Neg] must be in a Spec-head configuration with a Neg-operator.

According to (24), an INQ must be raised to the Neg-Spec-position where it can check off its inherent Neg-feature against a matching feature of the Neg-head. In this spirit, I propose the following abstract structure for INQ-raising in Afrikaans:

(25) Ek het niemand gesien nie.
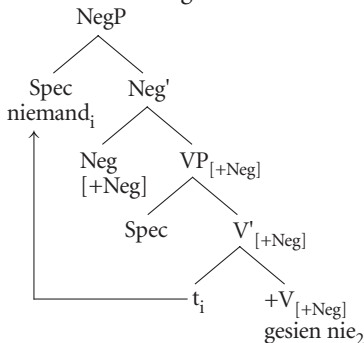
In (25) INQ is licensed in a left-peripheral scope position, after having been moved to the SpecNeg-position for purposes of feature checking. As filling the Spec-position sufficiently identifies the Neg-projection, feature percolation is licensed, and the second negator copy at the coda position of the negation scope will be spelled out.

Apart from the conceptual elegance of the Neg-criterion (negation can be subsumed under the general notion of operator licensing, cf. the Affect-Criterion of Haegeman 1995: 93), there are also good empirical arguments for a raising analysis in the spirit of (25).

As discussed in Molnárfi (2002b), in Afrikaans, the syntactic distribution of negative quantifiers and indefinite pronouns is complementary in the case of sentential negation:

(26) a. Ek het *niks*   (*nie*) gelees *nie.*   (NC-reading)
          I   have nothing not   read   not
          'I have read nothing'
      b. Ek het *nie niks* gelees *nie.*   (LC-reading)
          'I have read everything'
      c. Ek het *nie* iets   gelees *nie.*   (NC-reading)
          I   have not something read   not
          'I have read nothing'
      d. Ek het iets   *nie* gelees *nie.*   (specific reading)
          I   have something not read   not
          'I have not read something'

As the unmarked case, indefinite pronouns are negated within the scope of sentential negation in Afrikaans (cf. (26c) and Ponelis 1979: 373). This is an important difference with other West Germanic, where quantifiers are not transparent with respect to the scope of negation. Existentially bound indefinites cannot stay to the right of the first negator in the case of sentential negation (cf. Weiß 1998: 213). Note that this means that negation of indefinites in Afrikaans does not have to trigger Neg-incorporation, although the absorption of the negative marker into the quantifier is certainly possible as (26a) shows. In this case, the negation is felt to be more emphatic and categoric, but it is otherwise semantically equivalent to (26c) (cf. Ponelis 1979: 374).[13]

Compare, on the other hand, the specific reading of (26d), where the indefinite is placed *higher* than the first negator. However, *ceteris paribus*, inherently negated quantifiers cannot be c-commanded by the first negator. The required NC-reading occurs only if the INQ *precedes* the first negator in (26a). This indicates that INQs must occupy a relatively high syntactic position at the left

edge of the VP. Disregarding certain spoken variants for the moment (but see next section), the obligatory LC-reading of (26b) shows that the Neg-criterion must be complied with overtly in Afrikaans. In a minimalistic terminology, this means that INQs in Afrikaans contain a strong Neg-feature, which must be eliminated before Spell-out in SpecNeg.[14]

4. The puzzle – the spell-out of additional negation copies in the scope domain

An important problem not discussed in the previous section is whether the head of the Neg-projection can be spelled out adjacent to the quantifier in (24). In a more general perspective, the question arises in which structural conditions additional negation copies can be realized in the domain of Neg-percolation. In this respect, Afrikaans displays a puzzling difference pertaining to its spoken and written variants. The semantic interpretation of NC seems to vary in standard and colloquial varieties of the language. Compare the following sentence:

(27) dat hy *niks*   *nie* sien *nie*
      that he nothing not see   not

In (27), the negator head is spelled out right-adjacently to INQ. In written Afrikaans, the preferred reading of (27) is that of the logical cancellation of negation:

(28) 'that he sees everything'   (*LC-reading*)
      semantic paraphrase: <there is no X such that Y does not see X>.

As (28) shows, the insertion of the first negator adjacent to the INQ blocks the NC-reading. However, we find no such semantic shift in the more informal varieties of spoken Afrikaans, where the preferred interpretation of (27) is the usual NC-reading :

(29) 'that he does not see anything'   (*NC-reading*)
      semantic paraphrase: <there is no X such that Y sees X>

To all appearances, NC is more radical in the spoken variants of Afrikaans. The spell-out of additional negation copies with NC reading is allowed only in the colloquial language.

It is important to note that, by blocking the lexicalization of the Neg-head in (27), the written standard seems to follow a general strategy, avoiding the

spell-out of more than one negation copy in the percolation domain. Including (27), there are basically three syntactic contexts where additional negation copies can be spelled out.

a.   Spell-out of the NEG-head adjacently to INQ

(30)   Ek het   *niemand nie* gesien   *nie.* (NC-reading in the spoken language)
      I   have nobody   not seen   not
      'I have seen nobody'

(30) is the same construction as what we have seen in (27). If the first negator is spelled out, NC-reading is only possible in the informal language (cf. Ponelis 1993:454).

b.   Spell-out of an intermediate negation copy

(31) *Ek het   *nie* gedink   *nie* dat   hy dit
      I   have not thought   not that he this
      sou   doen *nie*   (OK in the spoken language)
      would do   not
      'I would not have thought that he would do this'

In (31), in addition to the coda copy at the end of the extraposition domain, an intermediate negation copy is spelled out at the semantic boundary of negation. Again, NC-reading is only possible in the spoken langauge, in written Afrikaans is (31) illicit (cf. Ponelis 1993:458).

c.   Negative spread

(32) *Ek het   nog *nooit niks*   van   *niemand*
      I   have yet   never nothing   form nobody
      gevra *nie*   (OK in the spoken language)
      asked not
      'I have never asked anybody for anything'

In (32) the domain of negation is maximally identified as all silent copies have been spelled out. The same semantic conditions hold as in (27). NC-reading is only licit in some varieties of the spoken language. The same construction is out in formal Afrikaans (cf. Ponelis 1993:454; Donaldson 1993:409 and Van der Wouden 1997:192).[15]

The three forms of negative concord will be discussed in some depth in the following sections, pursuing the question of why the semantic interpretation of the domain of negation is register-bound in Afrikaans.[16] The justification sought here will be primarily a functional one. Following Abraham (1999,

2000), I will argue that spoken and written Afrikaans follow different strategies of the identification and interpretation of the negation domain, arising from the different communicative needs written and spoken vernaculars have to attend to in the course of sentence planning and processing.

5.   Towards a solution – the identification of functional domains

As we have seen in the previous section, negative concord in written Afrikaans is much more restricted. Neither the specifier and the head position of the negation projection can be lexicalized at the same time, nor is the spell-out of additional copies allowed in the domain of infiltration, if the NC-reading is to be maintained. On the other hand, there seems to be no such restriction in the spoken language. To explain the different lexicalization requirements of the Neg-projection in written and spoken variants of Afrikaans, I would like to adopt here an idea of Ouhalla (1993), again from the field of focus licensing. Ouhalla introduces the following constraint pertaining to the licensing of functional projections:

(33)   **Identification Requirement** (Ouhalla 1993: 284)
        The (abstract) features encoded in the functional heads of Structural Descriptions must be identified.

Identification of the feature F is *lexicalization* of the functional domain of F. Crucially, such lexicalization can be achieved in two ways (cf. similarly Haider 1993: 95):

        a.   by lexicalizing the head position of F

or

        b.   by filling the Spec-Position of F

As a functional head cannot c-select lexical material for its Spec-position, the Spec-position of a functional projection can only be filled by movement. That means that identification of F can be achieved either by element displacement into the Spec-position of F or by spelling out the head position of F.

    Following this idea, Ouhalla (1993) discusses strategies of contrastive focusing in Classical Arabic. As it seems, focusing can be achieved in this language in two ways: by preposing the focused phrase or by introducing a focus marker sentence-initially. Ouhalla's point is that Classical Arabic uses these two strategies in a strictly complementary distribution. A natural explanation for

this fact is to assume that identification of F is the *minimal* lexicalization of the projection of F. If the identification of the focus feature takes place uniquely, applying both operations at the same time leads to an uneconomical derivation (Haegeman 1995: 109). It seems written Afrikaans makes use of the same strategy. Here also, the identification of the functional domain has to take place uniquely, that is non-redundantly. I will state this important correlation in the following principle:

(34) **Economy Principle of the identification of abstract features**
      Abstract features must be identified uniquely within their checking domain.

An important consequence of (34) is that, within the same negation domain, *either* the lexicalization of the Spec-position by movement *or* the morphological spell-out of the head position are allowed, but not both operations at the same time (Ouhalla 1993). As quantifier raising identifies the NEG-feature sufficiently and uniquely, any further lexicalization of the negation projection is uneconomical. Hence, *redundant* spell-outs within the same projection will be interpreted as scope markers of new negation domains. This triggers a cumulative reading (negation of negation) of (35) at LF:

(35) dat hy *niks nie* sien *nie*

Accordingly, (35) can be assigned the the following abstract structure:

(36) $[_{CP}$dat$[_{IP}$ hy$[_{SpecNeg}$ *niks*$[_{Neg'}$ $[_{SpecNeg}$$[_{Neg'}$ *nie*$_{NEG1}$$[_{VP}$ t$_j$t$_i$ sien *nie*$_{NEG2}$$]]]]]]]$

In (36) the INQ and the Neg-feature are not in the required Spec-Head configuration, as the indefinite opens a new negation domain higher in the tree. However, both Neg-projections are sufficiently and uniquely identified, the higher Neg-phrase by filling its SpecNeg-position with the INQ, the lower functional phrase by the lexicalization of the Neg-feature. Also, the Neg-criterion is complied with as the INQ can check off its inherent Neg-feature against the non-lexicalized Neg-head.

According to the Economy Principle in (34), the morphological presence of Neg$_1$ in (36) has to be interpreted as a signal for the opening of a new negation domain of which the scope is VP. As in (36) there are two scope domains, licensed in separate functional projections, the two conflicting negation elements will cancel out each other at LF, leading to negation of negation, that is a LC-reading. By complying with (34), the written language ensures the uniqueness of negation interpretation. A scope domain can be opened and closed only once.

Another important consequence of this analysis is that, adopting Ouhalla's approach, the Neg-criterion will become dispensable as a specific case of the Identification Requirement. What this means is that NC in Afrikaans is not about a formal configurational requirement between a Neg-operator and a Neg-head, but more generally, about the minimal identification of the negation domain. Such identification can take place in terms of head-lexicalization or in terms of INQ-raising to the SpecNeg-position (only the latter covered by the Neg-criterion). In both cases, Neg-percolation is licensed and the right-peripheral Neg-copy is spelled out in the spirit of (15). In the case of Afrikaans, such departure from the Neg-criterion seems not only empirically well motivated, but also desirable on general methodological grounds, obeying Occam's Razor.

6. Interpreting negation in the spoken language – negation copies as scope-shibboleths

Note first, that a LC-reading of (35) is also possible in spoken Afrikaans, if supported by appropriate prosodic signals:

(37)   a.   dat hy *niks NIE* sien *nie*   (LC-reading in the spoken language)
       b.   dat hy *niks nie* sien *nie*   (NC-reading in the spoken language)

It seems that disambiguation of the interpretation of negation in the spoken language is safeguarded by the assignment of different stress patterns to the first negator. In (37a), the first negator receives heavy pitch accent, while in (37b) the first negator is correlated with a default weak prosodic signal. As written languages lack this intonational dimension, no such prosodic disambiguation is possible here. (34) forces the LC-reading uniformly.

In the light of these observations, an important question arises: Why can our economy principle in (34) be overruled in spoken language? In what follows, I would like to argue that the justification for the redundant identification of the negation domain is a functional one, outside core syntax. The main idea is that the intermediate copies spelled out in (30, 31 and 32) have an important shibboleth function in the process of parsing: they facilitate the on-line processing and adequate semantic interpretation of negation domains.

Note, that the presence of such additional morphological shibboleths is extremely useful in spoken Afrikaans for at least two reasons. First, due to the highly impoverished morphology, the parser cannot make use of any distinct morphological case- or inflection-shibboleths in the online-processing of

acoustic discourse strings. Second, and crucially, due to the negation bracket and the $SV_{fin}OV_{infin}$ verbal bracket, the identification of valency and negation scope is delayed until the last lexical element within VP or in the domain of extraposition is processed (cf. also Abraham 1999 and 2000 for Bavarian and South German in general).

Let us consider a concrete example for how the spell-out of additional neg-copies can facilitate the processing of the negation bracket. On account of the right-peripheral bracketing in Afrikaans, the opening and coda shibboleth of the negation scope can sometimes be separated by a large structural space. The following example is taken from Bernini and Ramat (1996:63):

(38) *en   dan het hy geweet dat hy hom **nie** losgeskud het vir die*
    and then has he known that he him not freed   has for the
    herstel   van sy energie uit die diepste bronne in die natuur
    recovery of   his energy out the deepest sources in the nature
    *en   in sy eie gees **nie**.*
    and in his own spirit not
    'and then he knew that he could not free himself for the recovery of his energy from the deepest sources in the nature and in his own spirit'

In (38), we see a typical sentence from the written standard, where, due to extraposition of the heavy PP, the coda position of the sentential negation is shifted to the far right.

In the written language, parsing of (38) does not have to cause any serious difficulties for the reader. As texts, contrary to acoustic strings, can be easily read again, the interpretation of the negators can always be corrected and the intended reading of sentential negation remains accessible.

In the spoken language, on the other hand, parsing of (38) is heavily impaired, as the correct semantic interpretation of the negation scope can only be achieved *after* the negation bracket including the extraposition domain has been processed on-line, and the relevant morphological information in form of the second negator has been recognized. This constitutes a considerably burden on short-time memory. The relief strategy employed here is to spell out not only the coda-copy, but also the intermediate copy at the semantic boundary of the negation scope. This makes on-line identification possible for the hearer, even before the negation bracket is fully processed.

(39)   en dan het hy geweet dat hy hom *nie*$_1$ losgeskud het *nie*$_2$ [vir die herstel ...]*nie*$_3$

The correct on-line interpretation of (39) is safeguarded by the functional in-teraction of the first negator and its copy-shibboleths. We may think of the parsing process as taking place in the following steps. First, the negator at the left boundary of the VP is processed and identified as opening-shibboleth of the scope of negation. Then the parser proceeds to the first negation copy nie_2 and interprets the scope of negation as being closed within the domain of VP. Finally, the presence of the third negation copy nie_3 at the end of extraposition domain is interpreted as signal that the extraposed PP is in the scope of the negated matrix clause.[17]

Crucially, if the dislocated element does not belong to the scope of nega-tion, the third copy will not be realized. Compare, again, an example from Bernini and Ramat (1996:63):

(40) Jan en Marie het   *nie* op skool ontmoet *nie*, maar by 'n
      Jan and Marie have not on school met   not but by a
      partytjie (*nie*).
      party.
      'Jan and Marie have not met at school, but at a party'

As the adverbial in (40) does not belong to the semantic domain of negation, and as such it is not infiltrated by the Neg-feature, the sentence-peripheral copy cannot be realized.

Given the discussed peculiarities of negation bracketing in spoken Afri-kaans, the coda copy of the first negator may be seen as fulfilling an impor-tant twofold shibboleth-function: First, it morphologically signals the scope properties of elements in the domain of extraposition. Second, it identifies ex-traposed elements as rhematic constituents in the negated matrix clause. The contrast between (39) and (40) is particulartly telling in this respect.

6.1 Negative spread as a rhema-shibboleth

The radical form of this parsing strategy is *negative spread (NS)*, that is the full infiltration of the scope domain by negation copies:

(41) dat hy [$_{NEGP}$ *nooit* [$_{VP}$ *niks*   van *niemand* gevra het *nie*]]
      that he   never   nothing of nobody asked has not
      'that he never asked anybody for anything'

In (41), each silent copy of the negation head is spelled out in the rhematic domain of VP, ensuring a maximal lexical identification of the negation scope. The complete spell-out of the silent negation copies within VP provides the

parser with another helpful clue: it makes it possible to identify discourse rhemes early in the information flow, i.e., before the last member of the verbal bracket is processed (see particularly Abraham 1999, 2000).

Note, that NS is subject to two striking restrictions which support this discourse identifying function:

a.   NS can infiltrate only indefinite, but not definite NPs within VP.

> (42)   a.   dat ek nog *nooit* die vraag   aan iemand   gevra
>   that I   yet   never the question to   somebody asked
>   het   *nie*   (sentential negation)
>   have not
>   'that I have never asked somebody the question yet'
>   b.   *dat ek nog *nooit* nie die vraag aan *niemand* gevra het *nie*

Definites cannot be infiltrated by NS as they escape negation scope by movement to the left triggered under the discourse functional weight of *thema* and defocusing (cf. Abraham 1997; Molnárfi 2002a and Abraham & Molnárfi 2002). On the other hand, indefinites, as prototypically rhemes, stay within VP and so within the domain of sentential negation. In this way, the redundant Neg-shibboleths identify rhematic elements and only those in the structural domain of VP.

b.   NS is harmonious, that is, the NEG-feature must either spread on each indefinite within the domain of scope or NS does not occur at all.

> (43)   a.   *dat ek *nooit* iets van *niemand* gevra het *nie*
>   b.   *dat ek *nooit niks* van iemand gevra het *nie*
>   c.   dat ek *nooit niks* van *niemand* gevra het *nie*   (NC-reading)
>   d.   dat ek *nooit* iets van iemand gevra het *(*nie)*   (NC-reading)

Once negative spread has started to establish a negation chain, NC-reading can only be maintained if this negation chain is completed. Witness the ungrammaticality of (43a) and (43b) in this respect. The observable negation harmony is a signal for the parser that the accumulation of the Neg-features is to be interpreted within the same scope. Note that the formation of such harmonious chains is clearly an anaphoric process, each copy resuming the negation of the previous section (cf. Abraham 2000).

A closer look at the data reveals that negative spread and negative concord must be treated independently in Afrikaans. As (43c) and (43d) show, the realization of the intermediate copies, contrary to the spell-out of the second negation particle, is always optional. This strongly indicates that negative

spread to indefinites in Afrikaans is a process which is independent from the doubling of the first negator at the right-periphery of the sentence. While the spell-out of the lowest negation copy is always obligatory in the presence of a triggering element, indefinites in Afrikaans may remain unmarked for [+Neg] within the scope of negation (cf. 43d) or, alternatively, undergo negative spread as in (43c). The NC-reading is maintained in both cases.

Note that this is a relevant difference to languages like Bavarian where the NC-reading is only licensed if *all* indefinites are overtly marked for negation within the scope of a negative operator. If the spreading of the Neg-feature within the negation chain is interrupted in Bavarian, the second negator (*ned*) cannot be spelled out either. Compare Abraham (2000: 225) for the following examples:

(44) a. Er hat *kan* Menschen *ka* Bier   *ned* eingeschenkt
          he   has   no   man-DAT   no beer-ACC not   in-poured
          He has not poured any beer for anybody.
      b. Er hat *kan* Menschen a Bier   (*ned) eingeschenkt.
          He has   no   man-DAT   a beer-ACC not   in-poured

If in (44b) the second negator *ned* is realized overtly, the resulting semantics is that of logical negation cancelling, that is, the NC-reading of (44a) is lost. This indicates that in Bavarian negative concord is a redundancy mechanism for morphologically marking weak indefinites within the scope of negation (cf. Weiß 1998, 1999).

In Afrikaans, on the other hand, the possible dissociation of negative concord and the overt Neg-marking of indefinites within the scope of negation supports the assumption that negative spread applies at a late stage of the derivation, probably at PF.

Treating negative spread as a PF-phenomenon in Afrikaans also answers the question why the VP-internal status of the negative indefinites in (43c) does not violate the Neg-criterion. Contrary to "genuine" negative quantifiers, which, being triggers of NC, have to move overtly to Spec-Neg, VP-internal negative indefinites in the negation chain are just copies of an already established grammatical relation between the first negator and INQ, and as such are spelled out after syntax.

Given these considerations, we may think of the identification of the negation domain as taking place in the following steps.

Identification of the domain of negation

(45)   dat ek [$_{NEGP}$ [$_{NEG}$ [$_{VP}$ nooit iets van iemand gevra het]]]

First, the INQ is moved to the Spec-position of Neg in order to check its strong Neg-feature against the negator head. A Spec-Head configuration is established and INQ can take scope over the negation domain. By filling the SpecNeg-position, the negation projection is identified uniquely and sufficiently, according to (34).

(46)   dat ek [$_{NEGP}$ *nooit*$_i$ [$_{NEG}$ [$_{VP}$ t$_i$ iets van iemand gevra het *nie*]]]

negation percolation through silent copies

In (46), Neg-percolation is licensed by the identification of the negation domain, silent copies of [+Neg] infiltrating the domain of negation. According to (15), the most deeply embedded copy is spelled out. This operation takes places in the syntax after verb movement and extraposition, but still before Spell-out. The morphological realization of the second negator leads the the formation of the negation bracket, typical of Afrikaans. Note that, despite the presence of the second negator, the indefinites in (46) may remain to the right of the first negator without destroying the NC-reading.

(47)   dat ek [$_{NEGP}$ *nooit*$_i$ [$_{NEG}$ [$_{VP}$ t$_i$ niks van niemand gevra het *nie*]]]

negative spread

As (47) shows, at PF, additional copies may be spelled out, facilitating parsing and ensuring a maximal identification of the negation domain. Resuming the negation at every constituent also helps recognize discourse functions early in information flow, providing valuable morphological shibboleths for the identification of the rhematic VP-domain. Given the fundamental independency of negative concord and negative spread in Afrikaans in (46) and (47), we may analyze NS as a redundant spell-out mechanism at PF, which spreads a negative marker from a negative operator to elements belonging to the same natural class.

Would negative spread take place in overt syntax, one would have to assume a formal multiple operator movement analysis to SpecNeg along the lines of Haegeman (1995), in order to bring each negative indefinite into the scope:

(48) *dat ek [$_{NegP}$ niks$_i$ [$_{NegP}$ van niemand$_j$ [$_{NegP}$ *nooit*$_k$ [$_{Neg}$ [$_{VP}$ t$_k$ t$_j$ t$_i$ gevra het *nie*]]]]]

However, as (48) shows, such account would lead to false empirical predictions. In Afrikaans, this is exactly the movement of negatively marked indefinites to the left of the primary trigger-negator which destroys the NC-reading of the negation chain. Indefinites affected by negative spread do not have an operator status and, as such, are not forced to leave the domain of VP. Further support for this analysis comes from the observation that the presence of the coda negator is always obligatory in negative spread. Recall that the negator *nie* may be omitted after an inherently negated quantifier in Afrikaans, if the VP does not contain any lexical material, due to the leftward movement of the verb and its arguments in main clauses:

(49) Ek ken$_i$ [$_{NegP}$ niemand$_j$ [$_{Neg}$ (nie) [$_{VP}$ t$_j$ t$_i$]]]
      I   know   nobody   not

However, given the same conditions, the verb second position cannot license the omission of *nie* in negative spread contexts.

(50) Jy   vra nooit niks   van niemand *(nie)
      you ask never nothing of   nobody   not

If the negated indefinites were all adjoined to SpecNeg, the spell-out of the coda negator should be optional in (50), just as it is in (49). However, the contrast between (49) and (50) indicates that the VP in (50) has not been fully evacuated.

7.   Conclusion

In this paper, I have argued that multiple negation in Afrikaans is a specific form of top-down feature percolation in the scope domain of the first negator. The register-bound nature of such copy mechanisms can be justified as a parsing strategy: The online-processing and appropriate semantic interpretation of negation and rheme-domains have to be facilitated by morphological redundancy signals in the spoken, but not in the written language.

In the written standard, an economy condition on the identification of functional domains has to be respected, requiring that the opening and coda position of scope be marked non-redundantly within the same negation domain. Lacking the prosodic dimension of spoken vernaculars, the spell-out of

additional NEG-copies signal the opening of a new scope, leading to a *cumulative* interpretation of negation. As texts, unlike non-recurring acoustic strings, can be easily reread, this mechanism suffices to achieve the correct interpretation of negation domains.

In the spoken language, on-line scope interpretation can be considerably delayed if the coda member of the negation bracket is in the domain of extraposition. Here the spell-out of additional negation copies, supported by appropriate prosodic correlates, can be exploited to correctly interpret negation scope and to identify rhematic elements early in information flow. In extreme cases, all silent negation copies can be spelled out, ensuring a maximal morphological identification of the negation and of the rhematic domain at PF.

The existence of such morphological discourse shibboleths seems to be particularly helpful in SOV-languages, where the parser has to overcome a large structural space before identifying discourse status and grammatical functions, encoded into the coda position of the verbal bracket. This, no doubt, supports Abraham's findings (1999, 2000) that spoken vernaculars employ specific (and only partly grammaticalized) parsing strategies to overcome difficulties of on-line processing arising from bracketing of lexical material. On the other hand, exactly this kind of bracketing opens up a wide structural space of the middle field or the extended negation scope to be exploited to identify discourse functional categories as thema and rhema in the SOV-West Germanic.

Notes

1. However, it seems that Mocheno, a Bavarian vernacular spoken in Trentino allows for a scope marking mechanism, which is comparable to negation bracketing in Afrikaans (cf. Rowley 1986:259):

(i) der hat mer *net* khein wen   er kimp   *net*
     he   has me   not   said   when he comes not
     'He didn't say to me when he would come'

Thanks to an anonymous reviewer for drawing my attention to this empirical fact.

2. A well-noted exception is vernacular northwestern Afrikaans where the second *nie* is commonly lacking. However, this is probably due to external (interference) factors, facul-

tative NC being registered in the first place among *bilingual* speakers of Khoi and Afrikaans (cf. Ponelis 1993:445).

3. An anonymous reviewer suggests that multiple negation in Afrikaans and "classical" negative concord as discussed in the literature (see especially Weiß 1998, 1999 for Bavarian), might be in fact two disctinct phenomena: the former primarily a parsing mechanism for scope marking, the latter restricted to the context of negated indefinites. However, differences between the negation system of Afrikaans and other NC-languages only indicate that the empirical domain of previous NC-accounts has been too narrow, but not that an NC-analysis for multiple negation in Afrikaans should be rejected *per se*. Crucially, the main characteristics of NC, that is the presence of several negation elements jointly expressing a single negation, holds true both for Afrikaans and "classical" NC-vernaculars such as Bavarian or West Flemish (cf. van der Wouden 1997:182f.).

4. The functional domain above VP is left unelaborated in (11), since there are good empirical reasons to believe that the functional dimension in Afrikaans can be kept minimal. In particular, the feature checking cascade of Agr-projections assumed in Minimalism (Chomsky 1993) can be fully dispensed with. Agreement of nominatives with V is accounted for by a merger if I and V within VP (Reuland & Kosmeijer 1989) or in terms of status government (Haider's 1993:82). Optional leftward XP-movement takes place under the discourse functional weight of *thema* and *rhema,* instead of functional case attractors in Agr-projections (cf. Abraham 1997; Molnárfi 2002a and Abraham & Molnárfi 2002). The structural middle field, exploited for the identification of discourse functions is opened up by the SVOV verbal bracket in Afrikaans, which, similar to Dutch and German, is head final (Abraham 1997, 1999), contrary to Kayne (1994), Zwart (1993).

5. I will adopt here Reinhart's (1976) definition of c-command: α c-commands β iff

(a)   the first branching node dominating α also dominates β and

(b)   neither α dominates β nor β dominates α.

6. Haegeman (1995:126) argues for establishing a checking relation between the first and second negator (*nie* and *en* respectively) in West Flemish, which would satisfy the Neg-criterion overtly: V moves first to T and then to the Neg-head to pick up the negative clitic *en,* while SpecNeg is filled by the first negator *nie*. Such a Spec-head configuration is, however, less than plausible in Afrikaans, where the second negator is always realized right-peripherally and often dissociated from the verbal head (cf. 4a–d).

7. I would like to thank Jac Conradie for drawing my attention to this fact.

8. Note that this is an important difference to West Flemish where the second negator may only move to the left from suboordonated clauses (Haegeman 1995:117f. and Weiß 1998:201):

(i)   niets en_i-peinzen-k da   ze t_i-wilt   doen
       nothing en think-cLI   that she   want do
       'I think she will do nothing.'

In (i) the Neg-head follows the topicalized indefinite pronoun into the matrix clause so that a checking relation in terms of the Neg-criterion is established. In the corresponding Afrikaans sentence, the second negator must be spelled out right-peripherally:

(ii)   Niks dink ek dat sy wil doen *(nie).

(ii) indicates that, in Afrikaans, no checking relation is established between the first and second negator.

9. Alternatively one could dispense with extraposition, as proposed in the minimalistically inspired Universal Base Hypothesis (cf. Kayne 1994). Zwart (1993) also advocates that the SOV-Westgermania are in fact hidden SVO languages with forced overt movement of all VP-internal material to functional projections. However, apart from the dubious nature of such *pervasive* leftward movement (cf. Haider & Rosengren 1998:44f.), adopting the Base Hypothesis would not only blur important insights of Cinque's (1993) Accent Theory, but also straightforwardly lead to false empirical predictions, if discourse functional considerations are also taken into account in languages like German or Afrikaans (cf. Abraham 1997, 1999; Molnárfi 2002a and Abraham & Molnárfi 2002). Haegeman (1995:58f.) discusses in detail, not even deploying a full minimalist machinery in eliminating extraposition from the theory, the problem is only shifted from rightward movement to leftward clausal movement to some stipulated low functional projection.

10. Unless, similarly to Section 2, the VP is fully evacuated, and the realization of NC is optional (cf. Ponelis 1993:455):

(i)   Ek$_i$ sien$_j$ hom$_k$ [$_{NegP}$ nooit (nie)][$_{VP}$ t$_i$ t$_j$ t$_k$].
       I see   him   never   not
       'I never see him.'

As the abstract structure of (i) shows, the Neg-head can be optionally realized adjacently to the INQ, if there is no lexical material within VP to be followed by the second negator. Contrary to (14a–c), thus, no negation copy is spelled out in (i) (cf. 5 for discussion).

11. Weiß (1998:210f.) assumes that the primary function of multiple negation is to disambiguate quantificational properties of weak indefinites. As NC in Bavarian is an optional process, involving only INQs, multiple negators signal that a negated indefinite is existentially bound within the scope of the nucleus:

(i)   wai *koa* Beispiel bekannt sa muaß
       as no example known   be must
       'as no example must be known'

(ii)   wai *koa* Beispiel *ned* bekannt sa muaß   (NC-reading)
       as no example not known   be must

While single negation in (i) is ambiguous between an existential and a generic reading, the double-negated indefinite in (ii) can only be interpreted as existentially bound (cf. Weis 1998:215). However, as the second negator in (iii) is obligatory, no such functional justification can be given for NC in Afrikaans:

(iii)   omdat nie voorbeelde bekend moet wees *(nie)

12. Recently, it has been argued that negated indefinites are not operators, but weak indefinites introducing restriced variables which get bound by existential closure (cf. Weiß 2001). While conceptual arguments seem to favour the idea of negation as an instance of operator licensing (cf. the Affect-Criterion of Haegeman 1995:93), the present syntactic argument, that is overt raising of a negated indefinite to SpecNeg, is compatible with both views. While in Haegeman's account Neg-movement takes place to bring an operator into a scope position, in Weiß' concept negated indefinites move because the strong Neg-feature of the indefinite has to be be checked off in minimalist terms.

13. As (26c) is simply a non-incorporated, but semantically identical version of (26a), there is, contrary to an anonymous reviewer, no reason to assume two different syntactic positions for NegP in (26a and c).

14. No operator status is assumed here for the negation particle *g'n*, displaying the same distribution as the first negator in spoken Afrikaans (cf. Donaldson 1993:409f.). Similarly to *nie1*, *g'n* can cooccur with definite NPs and license sentential negation involving definites and prepositional phrases:

(i)   Ek het *g'n* die man gesien *nie*.
       'I have not seen the man'

(ii)   Ek het *g'n* iets gesê *nie*.
       'I have not say anything'

(iii) Ek is *g'n* van die Kaap *nie*.
       'I am not from the Cape'

15. According to an anonymous reviewer, similar restrictions seem to hold in certain variants of spoken Spanish. While undoubtedly interesting, unfortunately, I do not have the relevant empirical data at my disposal to discuss this matter here any further.

16. There is no *a priori* reason why the lexicalization of the Neg-head in (27) should block NC-reading in written Afrikaans. Data from Aarschotts (a dialect spoken in South-Brabant) and West Flemish show that the morphological spell-out of the first negator does not have to effect the reading of NC triggered by INQ (cf. Pauwels 1958:435f.; Ponelis 1993:467 and Haegeman 1995:116):

(i)   Ik em *niemand nie* gezien *nie*   (NC-reading in Aarschotts)
       I   have nobody   not seen   not
       'I have seen nobody'

(ii)   da   Valère ier *niemand nie en*-kent   (NC-reading in West Flemish)
       that Valère here nobody   not *en* knows
       'that Valère knows nobody here'

17. Redundant spell-out of the intermediate Neg-copy is also useful in sentence planning, the speaker resuming the negation at the semantic boundary of the scope. Sentence planning and parsing go hand in hand, rather than displaying conflicting demands (cf. Wasow 1997).

References

Abraham, Werner (1997). "The base Structure of the German Clause under Discourse Functional Weight: Contentful Functional Categories vs. Derivative Ones". In Werner Abraham & Elly van Gelderen (Eds.), *German: Syntactic Problems – Problematic Syntax* (pp. 11–43). Tübingen: Max Niemeyer.

Abraham, Werner (1999). "Präteritumschwund in German: the Parsing Trigger". In Werner Abraham (Ed.), *Characteristic Properties of Spoken Vernaculars. Folia Linguistica, 33*(1) (pp. 39–58).

Abraham, Werner (2000). "Mehrfachnegation im Deutschen und im Afrikaans". In Susanne Beckmann, Peter-Paul König, & Georg Wolf (Eds.), *Festschrift für Franz Hundsnurscher* (pp. 221–226.) Tübingen: Max Niemeyer.

Abraham, Werner & László Molnárfi (2002). "The German clause under discourse functional weight: Focus and Antifocus". In Werner Abraham & C. Jan-Wouter Zwart (Eds.), *Issues in Comparative German(ic) Typology. Linguistik Aktuell/Linguistics Today, 45* (pp. 1–43). Amsterdam: John Benjamins.

Bayer, Josef (1990). "What Bavarian Negative Concord Reveals about the Syntactic Structure of German". In Joan Mascaró & Marina Nespor (Eds.), *Grammar in Progress* (pp. 13–23). Dordrecht: Foris.

Bernini Giuliano, Paolo Ramat (1996). *Negative Sentences in the Languages of Europe.* Berlin: Mouton de Gruyter.

Chomsky, Noam (1993). "A Minimalist Program for Linguistic Theory". In Kenneth Hale & Samuel J. Keyser (Eds.), *The View from Building 20. Essays in Honor of Sylvian Bromberger.* Cambridge, MA: MIT Press.

Cinque, Guglielmo (1993). "A Null Theory of Phrase and Compound Stress". *Linguistic Inquiry, 24*(2), 239–298.

Donaldson, Bruce C. (1993). *A Grammar of Afrikaans.* Berlin: Mouton de Gruyter.

Haftka, Brigitta (1994). "Wie positioniere ich meine Position? Überlegungen zu funktionalen Phrasen im deutschen Mittelfeld". In Brigitta Haftka (Ed.), *Was determiniert Wortstellungsvariation?* (pp. 139–159). Opladen: Westdeutscher Verlag.

Haegeman, Liliane (1995). *The Syntax of Negation.* Cambridge: University Press.

Haider, Hubert (1993). *Deutsche Syntax- generativ. Vorstudien zur Theorie einer projektiven Grammatik.* Tübingen: Narr.

Haider, Hubert (1997). "Projective Economy. On the Minimal Functional Structure of the German Clause". In Werner Abraham and Elly van Gelderen (Eds.), *German: syntactic problems – problematic syntax* (pp. 83–103). Tübingen: Max Niemeyer.

Haider, Hubert & Inger Rosengren (1998). "Scrambling". *Sprache und Pragmatik, 49*, 1–104.

Jacobs, J. (1993). "Integration". In Marga Reis (Ed.), *Wortstellung und Informationsstruktur* (pp. 63–116). Tübingen: Narr.

Kayne, Richard (1994). *The antisymmetry of syntax.* Cambridge, MA: MIT Press.

Molnárfi, László (2002a). "Focus and Antifocus in Afrikaans and West Germanic". *Linguistics, 40*(6), 1107–1160.

Molnárfi, László (2002b). "Die Negationsklammer im Afrikaans – Mehrfachnegation aus formaler und funktionaler Sicht". In Werner Abraham & C. Jan-Wouter Zwart (Eds.), *Issues in Comparative German(ic) Typology. Linguistik Aktuell/Linguistics Today, 45* (pp. 221–259). Amsterdam: John Benjamins.

Ouhalla, Jamal (1993). "Negation, focus and tense: the Arabic *maa* and *laa*". *Rivista di Linguistica, 53*(2), 275–300.

Pauwels, Jan L. (1958). "Het dialect van Aarschot en omstreken". Brussel: Belgisch Interuniversitair Centrum voor Neerlandistiek. (=Bouwstoffen en studiën voor de geschiedenis van het Nederlands, 5/1)

Ponelis, Fritz (1979). *Afrikaanse Sintaksis*. Pretoria: J. L.Van Schaik.

Ponelis, Fritz (1993). *The Development of Afrikaans*. Frankfurt am Main: Peter Lang. (=Duisburger Arbeiten zur Sprach- und Kulturwissenschaft, 18)

Reinhart, Tanya (1976). *The Syntactic Domain of Anaphora*. Cambridge, MA: MIT Press.

Reuland, Eric & Wim Kosmeijer (1988). "Projecting inflected verbs". *Groninger Arbeiten zur germanistischen Linguistik, 29*, 88–113.

Rizzi, Luigi (1996). "Residual Verb Second and the Wh-Criterion". In Adriana Belletti & Luigi Rizzi (Eds.), *Parameters and Functional Heads* (pp. 63–90). Oxford: Oxford University Press.

Rochemont, Michael S. (1986). *Focus in Generative Grammar*. Amsterdam: Benjamins.

Rosengren, Inger (1993). "Wahlfreiheit mit Konsequenzen – Srcambling, Topikalisierung und FHG im Dienste der Informationssstrukturierung". In Marga Reis (Ed.), *Wortstellung und Informationsstruktur* (pp. 251–312). Tübingen: Narr.

Rowley, Anthony R. (1986). *Fersental. (Val Férsina bei Trient/Oberitalien). Untersuchung einer Sprachinselmundart*. Tübingen: Max Niemeyer. (= Phonai Lautbibliothek der deutschen Sprache, 31, Monographien 18)

Selkirk, Elisabeth O. (1984). *Phonology and Syntax. The Relation between Sound and Structure*. Cambridge: MIT Press.

Van der Wouden, Ton (1996). *Negative Contexts. Collocation, polarity and multiple negation*. London and New York: Routledge.

Wasow, Thomas (1997). "End-weight from the Speaker's Perspective". *Journal of Psycholinguistic Research, 263*, 347–361.

Weiß, Helmut (1998). *Syntax des Bairischen. Studien zur Grammatik einer natürlichen Sprache*. Tübingen: Niemeyer.

Weiß, Helmut (1999). "Duplex negatio non semper affirmat: a theory of double negation in Bavarian". *Linguistics, 37*(5), 818–846.

Weiß, Helmut (this volume). "Information Structure Meets Minimalist Syntax. On Argument Order and Case Morphology in Bavarian".

Zwart, Jan-Wouter (1993). *Dutch Syntax. A Minimalist Approach*. Ph.D. Thesis, University of Groningen.

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